

IPG Automotive Releases Version 9.0 of the CarMaker Product Family

An extended range of applications of simulation software offers new functionalities for virtual test driving

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From cooperative driving with SimNet, advanced and new sensor models to the parallelization of multiple GPUs - the release 9.0 of the CarMaker Product Family includes numerous new, innovative applications for virtual vehicle development. In response to the societal mega-trends digitization and autonomous driving leading to higher validation efforts in vehicle development, the Karlsruhe-based company consolidated its products particularly in the fields of performance and flexibility of scenarios.

New, improved and validated sensor models

With the release 9.0, the calculations of Radar RSI switch to physically based field calculations. A wide range of effects are thereby considered before the raw data are then processed in a signal processing model. Radar RSI was validated in an extensive measurement campaign in cooperation with Magna Electronics, one of the leading automotive suppliers.

To support the functionality tests more extensively, the Camera HiFi Sensor is added to the list of High Fidelity (HiFi) Sensors. It generates camera specific object lists of recognized traffic objects, traffic signs and traffic lights. Various effects need to be taken into consideration, as for example occlusion or influence of rain or fog.

Further, the release 9.0 introduces a new Ideal Sensor. The Object by Lane Sensor identifies traffic objects on selected, adjacent traffic lanes and provides information about the lanes as well as about the traffic objects using them. That is why the sensor is perfectly suitable for trajectory planning.

Flexible and detailed scenario generation

In order to provide a quick and easy access to realistic road networks in CarMaker, map data including road characteristics as lanes, lane markings and speed limits from HERE HD Live Maps is available for import. The user decides whether to load a selected section of a road network or the required roads along a definable route.

The release 9.0 enables exports of road networks created with the Scenario Editor not only in the ROAD5 format but also in the OpenDRIVE open file format. In this way, the user can exchange with other platforms and once produced road networks can be reused more often.

Other new features in the Scenario Editor include new possibilities for an easy definition of traffic signs and traffic lights as well as the corresponding functional markings. By allocating different speed limits to different traffic lanes on the road and through traffic lights located on the opposite sides of an intersection, the user profits from maximum flexibility when configuring scenarios.

As of now and in addition to the so far generic Traffic Model, a Human Driver Model is available. The behavior is thereby not only enhanced during lane switching, but also models human traits as reaction time or imprecise estimations of distance and speed. Therefore, the behavior of road users appears more realistic and human-like.

Cooperative driving with SimNet through co-simulation of various prototypes in a common scenario

The use of cooperative driving as basis for applications such as V2X communication or platooning has already been possible for some time with the simulation solutions of the CarMaker product family. With the release 9.0, cooperative driving with SimNet now becomes a regular feature. It allows for simulation in one common scenario of up to ten ego vehicles on a single computer or up to three ego vehicles in a network of CarMaker, TruckMaker or MotorcycleMaker.

Great scalability through support of CarMaker in Docker containers

Containers facilitate a stable virtual environment for example when running an application in the cloud. The new release enables simulation solutions in the CarMaker product family to be carried out in one Docker container. Easy portability and excellent scalability can therefore be reached.



Image: With the release 9.0 for the CarMaker product family, IPG Automotive provides a large scale of new features for virtual test driving.

About IPG Automotive GmbH

As a global leader in virtual test driving technology, IPG Automotive develops innovative simulation solutions for vehicle development. Designed for seamless use, the software and hardware products can be applied throughout the entire development process, from proof-of-concept to validation and release. The company's virtual prototyping technology facilitates the automotive systems engineering approach, allowing users to develop and test new systems in a virtual whole vehicle.

IPG Automotive is an expert in the field of virtual development methods for the application areas of Autonomous Vehicles, ADAS, Powertrain and Vehicle Dynamics, committed to providing support to master the growing complexity in these domains. Together with its international clients and partners, the company is pioneering simulation technology that is increasing the efficiency of development processes.

By taking real test driving into the virtual world as a complement to on-road testing, IPG Automotive contributes significantly to technical progress and shares in shaping the mobility of tomorrow with regard to comfort, safety, economic efficiency and environmental friendliness.

In addition to the company headquarters in Karlsruhe, Germany, IPG Automotive provides innovative development services to its customers and partners at the national offices in Braunschweig, Frankfurt and Munich as well as in China, France, Japan, Korea, Sweden, the UK and the USA.

Further information at www.ipg-automotive.com

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