AVL Dynamic Ground Truth System™

Capture true reality

THE CHALLENGE

One of the key stages on the path to homologation for ADAS/AD vehicles is the independent evaluation of the sensor system with a reliable representation of the reality – the so-called ground truth.

Having an accurate benchmark of the real world lets you measure the accuracy of the vehicle's perception systems and therefore, engineer their safety. The closer the vehicle's perception is to ground truth, the more accurate the picture of its surroundings will be.

Being able to measure ground truth in this way will support several development tasks:

- Sensor and perception performance evaluation
- System validation and homologation
- Sensor model calibration and validation
- Detection and generation of scenarios incl. statistics

AVL SOLUTION

AVL has developed a highly precise sensor setup as a one-box solution, the AVL Dynamic Ground Truth System™ (DGT). It captures a highly accurate 360° field of view of a vehicle's environment for the statistical comparison and validation of the ADAS/AD system under test (SUT).

The recorded image is composed of a time-synchronized lidar, camera and high-precision GNSS sensors to enable a high-precision comparison of the DGT and SUT data.

THE ADDED VALUE

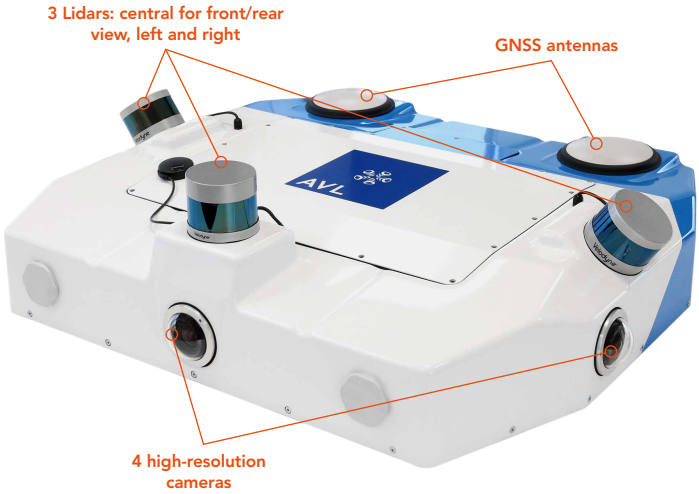
- Unique data accuracy of ground truth recording
- Data analytics with powerful offline perception
- Precalibrated one-box solution
- Reliable, modular and certified system
- Highly skilled expert network for fast and reliable service and maintance

SOLUTION OVERVIEW
AVL DYNAMIC GROUND TRUTH SYSTEM™

Hardware
We have a 360° field of view of lidar as well as camera sensors to generate a holistic view of the environment around the ego vehicle. In addition, the system is equipped with a highly accurated GNSS for locating the ego vehicle on the map but also for ego motion compensation. The data streams of the DGT system and SUT sensors are recorded in a time-synchronized way to guarantee a highly precise comparison of both data streams.

Software
During test trips, sensor raw data is synchronized with the system under test (SUT) data. All data is stored on hard disks or data logger solutions from a third party before they are transferred to a data center. From there, data is available for further processing with the offline perception executed on AVL's ADAS/AD Big Data and Analytics Platform (AAP).

The high-performance perception software is used to generate an independent reference image of the vehicle's environment based on the recorded raw data of the DGT. The perception software generates a data stream in the format of the open simulation interface which is then used for analysis and validation against the SUT.



AAP's scenario viewer provides a synchronized view of video, object, time-series and map data for a clear visual interpretation of the test drive

KEY FEATURES OF THE PERCEPTION SOFTWARE

- 360° Camera and lidar perception
- Dynamic ground truth
  - Perception of detected dynamic objects: car, truck, motorcycle, bicycle, pedestrian
  - Position, velocity and acceleration of detected objects
- Static ground truth: Line detection and fusion
- Forward/backward tracking
- Visualization of driving scenario on the map in the data center

FIND OUT MORE

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