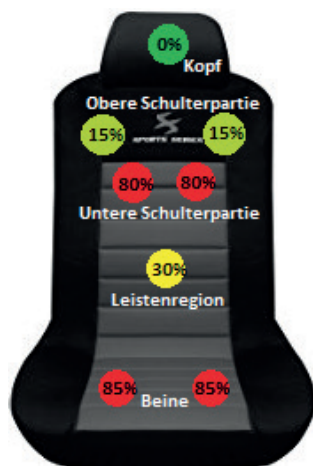


Multi-Sensor Driver and Passenger Monitoring

Multi-sensor driver monitoring systems are used to monitor driver behaviour in complex traffic situations. The data acquired by different sensors allow conclusions about the drivers' behaviour as well as their perceived sense of comfort and stress. By using an additional vehicle environment recognition system the driver assessment is interrelated to the traffic situation.

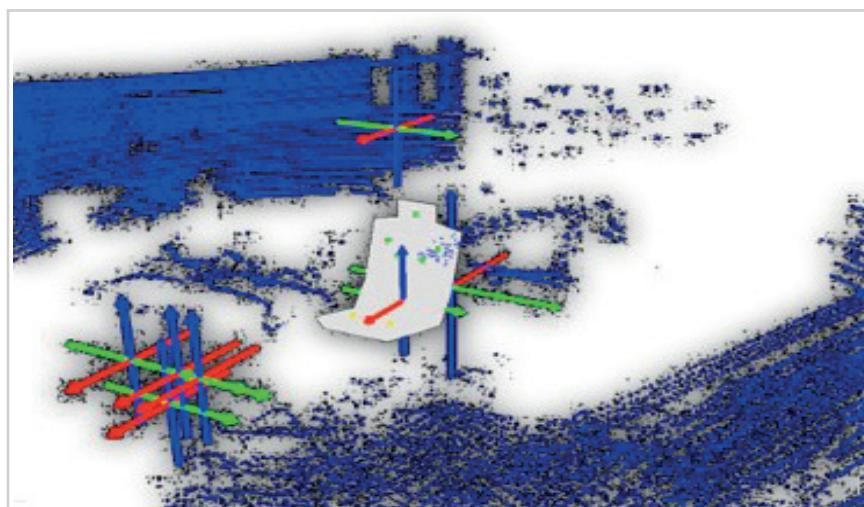
Tactile Sensors: Seat Sensors



Visual Sensors: In-Car Camera System



Sensor Combination



Driver and Passenger Monitoring

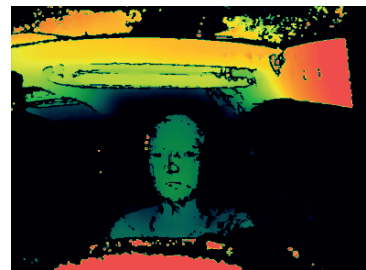
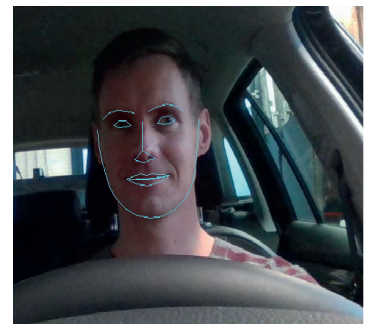
Seat Sensors

- Sensor mat with integrated pressure sensors for measuring the pressure distribution
- Adaptable to various car seats
- Output for measured pressure data
- Logging of chronological sequences
- Suitable for different sizes and weights of drivers and passengers



In-Car Camera System

- Combination of color and infrared cameras (optionally available with projector system)
- Inclusion of RGBD cameras such as Intel®RealSense
- Framework to log, visualize and analyze acquired sensor data
- Acquisition and provision of the following physical parameters:
 - Position of head in relation to the seat and the front window
 - Angle of head rotation
 - Eye movement
 - Eyebrow movement
 - Gaze patterns (e.g. frequent gaze exchanges, staring)



Benefits

- By fusing sensor data, we develop functions for the assisted and automated driving:
 - Vehicle provides feedback to the driver on his or her stress level in the current traffic situation
 - Vehicle assesses driver readiness
 - Vehicle recommends driving maneuvers according to the driver's stress level and the traffic situation

