



Abschlussvortrag Masterarbeit Sönke Vajen

„Comparison of formal approaches for Runtime Monitoring for ADAS Development“

Bosch is hugely involved in the research and development of advanced driver assistance systems (ADAS).

One important aspect of ADAS is the verification and validation. The safety of autonomous driving cars is crucial since human lives can be endangered. However, the algorithms progress fast and are deeply complex. Thus testing of all possible inputs for the driving functions is impossible to accomplish during the given time for development. One problem is the nonexistence of a database with all possible situations. Furthermore, testing the systems under real conditions consumes an immense amount of time and wouldn't achieve a high percentage of all potential possibilities, either. However, using well-defined trigger functions can support the testing process significantly. Every autonomous vehicle produces an immense amount of sensor data.

This data could be used to identify new test scenarios for verification and validation. Due to the bandwidth limitations of vehicles, it is necessary to filter the transmitted data on only that worth recording. Trigger functions control the recording process because not all the sensor data are relevant for checking the requirement satisfaction, and consequently, a lot of data can be discarded. One option for using formal approaches like signal temporal logic (STL) in this area is to model specifications based on the recorded data. However, in this paper, the formal semantics are used for defining trigger functions. Anyhow, the best method for defining trigger functions is still to be found. Thus, a comparison of different formal approaches is necessary.

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Ort: Besprechungsraum 214, ISSE (C10), Arnold-Sommerfeld-Straße 1