How Traffic Situations and Non-Driving Related Tasks Affect the Take-Over Quality in Highly Automated Driving

Abstract:
Highly automated driving constitutes a temporary transfer of the primary driving task from the driver to the automated vehicle. In case of system limits, drivers take back control of the vehicle. This study investigates the effect of varying traffic situations and non-driving related tasks on the take-over process and quality. The experiment is conducted in a high-fidelity driving simulator. The standardized visual Surrogate Reference Task (SuRT) and the cognitive n-back Task are used to simulate the non-driving related tasks. Participants experience four different traffic situations. Results of this experiment show a strong influence of the traffic situations on the take-over quality in a highway setting, if the traffic density is high. The non-driving related tasks SuRT and the n-back Task show similar effects on the take-over process with a higher total number of collisions by the SuRT in the high density traffic situation.

Intellectual Contribution:
Discipline-based Research

Kongress- / Buchtitel: