Automated Driving -- Assessment of Interaction Concepts Under Real Driving Conditions

Abstract:
Technical progress enables the development of automated driving functions and the companies involved announce automated vehicles to be ready for series production by the end of this decade. But besides all technical challenges, it remains crucial to investigate the impact of automation on humans in the car, especially the one formerly known as the driver, and to figure out which level of autonomy fits the drivers' needs. This paper presents a driving study conducted on a test track in Germany. The vehicle is equipped to perform the driving task in a highway-like traffic scenario, referring to a level 3 automation in line with the definition of the SAE [1]. Within this conditionally automated setting, four interaction concepts, which differ in the distribution of parts of the driving task, were evaluated. Within the limitations, findings show the drivers' preference to transfer as many tasks as possible to the automated system, thus raising comfort and satisfaction while the loss of control over the vehicle's actions plays a minor role in the rating for the overall acceptability of the sole concepts.

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