You Spin Me Right Round: Priming Users for Takeovers in Autonomous Vehicles Using a Motorized Swivel Seat

Open Bachelor/Master Thesis

Background

Highly automated vehicles enable the use of swivel seats as the driver is not involved in the driving task. However, the vehicle may still be bound to specific operational driving domains (ODDs), e.g., a highway, and requires the driver to take over if the current ODD is left, e.g., before a construction site. A motorized swivel seat can prime drivers for such takeover to enhance the driving performance thereinafter. However, as the driver is not facing the road, it is unclear how fast the driver should be rotated, if/what should be displayed prior rotation, and whether the rotation speed can convey takeover urgency.

Research Goal

The aim of this thesis is to investigate how to prime drivers for a takeover, to increase effectiveness, reduce driving errors, and to make the takeover as relaxing as possible. A related work research should be conducted and a prototype using the existing SwiVR-Car-Seat should be designed and implemented that investigates these aspects. Finally, the defined hypothesis should be evaluated by conducting a study.

Based on bachelor/master level the scope is adapted.

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