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Titel des Beitrags: Development of a human driver model during highly automated driving for the ASIL controllability classification

Abstract: The number of cars on the road equipped with advanced driver assistance systems (ADAS) such as adaptive cruise control (ACC) or autonomous emergency breaking (AEB) is steadily increasing. To determine the functional safety requirements for ADAS the development-process is defined by the ISO 26262. Therefore, this standard classifies the systems failure modes depending on severity, controllability and exposure. While active, these systems currently require the driver to supervise the system at all times and to be able to react quickly on system failure by holding the steering wheel constantly. Future ADAS will allow the driver to complete non-driving related task such as reading or playing games. In this case, the ISO 26262 currently fails at defining a plausible controllability-factor since the driver is not holding the steering wheel or supervising the system. Therefore, another way of defining a controllability factor during “hands-off” driving is needed. In this paper, we introduce a novel way of defining the controllability factor for the ASIL classification based on the analysis of human driver models and several studies on takeover-times during highly automated driving.

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