

Automated and Connected Driving from a User-Centric Viewpoint



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Abstract:

Automated and connected driving can be seen as a paradigm shift in the automotive domain which will change the today's role of the human driver substantially. More and more parts of the driving task are to be taken over by technical components for different scenarios. The application areas reach from fully automated parking up to automated driving on a highway with different involvements of the driver in monitoring tasks (SAE level 2 to 5). Thus, it is essential to understand how this role change will influence the human driver and how we can support him by designing an easy to understand, safe and comfortable interaction with the automated vehicle.

From Human Factors research we know that it is crucial to ensure that the driver has a correct mental model about the automation levels and its current status to avoid mode confusion and resulting errors in operation. In addition, transitions of control between the driver and the automated vehicle need a careful design that is adjusted to the current traffic situation and the driver status. For example, mobile devices that the driver uses during the automated driving can be integrated smoothly in the overall interaction design concept to support transitions.

The talk will give an overview on selected research topics in the area of user-centric development of automated and connected vehicles at DLR. It will underline why it is important to put the human into focus when designing a new, exciting technology such as automated and connected vehicles.

About the speaker:

Prof. Dr. Frank Köster is currently head of the "Automotive Systems" department at DLR (Deutsches Zentrum für Luft- und Raumfahrt) and Professor for "Intelligent Transport Systems" at the University of Oldenburg. He studied computer science at the University of Oldenburg where he graduated in 2001 and habilitated in 2007.

Frank Köster is a member of the round table "Autonomous Driving" of the Federal Ministry of Transport and Digital Infrastructure, representative of the DLR in various national and international committees and organizations like SafeTrans and ERTICO as well as referee of research projects, journals and congresses concerning autonomous and connected driving.

