

Human-machine Interaction in Driving Automation

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Abstract:

The increasing prevalence of automated systems in vehicles elicited the need to examine how drivers interact with such systems and how it affects their driving safety. In this talk, I will present several studies that begin exploring issues of human machine interactions in driving focusing on driving automation from different perspectives. I will begin discussing issues of transfer of control, i.e., how long in advance does a driver need to be alerted before she is ready to drive safely. Then, I will present a related study where we examined how well drivers are able to assume control unexpectedly when the automation fails abruptly after a prolonged period of automated driving. Finally, I will present a study on drivers' tendency to overtake a lead vehicle when autonomous vs. manual driving are compared. Finally, I will talk about future research directions in autonomous driving that I think are crucial for better understanding the effects of the interaction between drivers and automated cars on traffic safety.