Situation Awareness with Different Levels of Automation

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Abstract—What effect will periods of automated driving will have on driver performance after transfer of control? In our driving simulator experiment (N = 48) participants in four different automation conditions (fully autonomous vehicle, autonomous steering, autonomous speed control, no automation) were evaluated based on their post-transition accident avoidance, situational awareness, and feelings of trust in and comfort with autonomous or partially autonomous driving.

Preliminary results from behavioral data show significant differences in time to initiate evasive action across conditions. Participants in the fully autonomous condition showed greater trust and comfort with the car’s autonomous features than those in the autonomous speed control condition.