



UTC Project Information	
Project Title	Impacts of in-vehicle alert systems on situational awareness and driving performance in SAE level 3 vehicle automation
University	Purdue University
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Funding Source(s) and Amounts Provided	CCAT \$178,337 Cost share partner (Georgia Tech): \$178,337
Total Project Cost	\$356,674
Agency ID/Contract	69A3551747105
Start and End Dates	01/01/2018 – 9/30/2022
Brief Abstract of Research Project	With greater vehicle automation, research on how the communication of capabilities and limitations of automated driving systems (ADSs) impacts safety needed. High profile crashes involving misuse of partial driving automation systems (L2) suggest that some drivers over-trust currently available L2 ADSs relative to their capabilities. This could worsen with L3 ADSs that might require driver intervention while being automated most of the time. Participants in this simulator study were provided introductory information via video that communicated the driver's role at different levels of automation as well as the capabilities and limitations of the simulated L3 ADS. This video ended with either an explicit reminder of the driver's responsibilities when using conditional driving automation (L3 Reminder condition) or highlighted benefits that might arrive with higher levels of driving automation (Future Benefits condition). Significant differences were found in ratings of familiarity, with participants in the Future Benefits condition reporting greater levels of familiarity over the course of the experiment (though still low) than their L3 Reminder condition counterparts, but few group differences in monitoring or take-over performance were found between conditions. The importance of hands-on practice for improving aspects of take-over performance was observed.
Most Relevant CCAT Research Thrusts	<input type="checkbox"/> Enabling Technology <input type="checkbox"/> Planning and Policy <input checked="" type="checkbox"/> Human Factors <input type="checkbox"/> Infrastructure Design and Management <input type="checkbox"/> Control and Operations <input type="checkbox"/> Models and Implementation
Describe Implementation of Research Outcomes (or why not implemented)	Research results were based on pilot experiments that were implemented in a virtual driving simulation environment. Any real-life implementation of such research outcomes would be relevant insofar as such systems were indeed deployed or deployable. Given the evaluation and findings of the pilot experiments, potential implementations of the research outcomes

	would be new protocols and procedures that departments of motor vehicles could adopt to certify drivers for L3 automation during the transition to higher levels of vehicular automation.
Impacts/Benefits of Implementation (actual, not anticipated)	No research outcomes implemented so far.
Web Links <ul style="list-style-type: none">• Reports• Project website	ccat.umtri.umich.edu