Insurance and Automated Vehicles

Washington State Autonomous Vehicle Work Group
AV Safety Subcommittee
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- Safety is paramount
- Insurer data access is critical
- Standards should be set nationally
- Administration should remain local
- Insurance requirements should be set by the states
- Existing liability principles/authorities should apply
- Data security/privacy standards must adapt to the reality of AV
- Focus on human factors

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Human Factors

- **64%** percent of respondents indicated they would be more likely to engage in at least one secondary task when the vehicle is driving itself compared to when they're driving.

  (State Farm 2016 and 2018 Automated Vehicle Survey)

- **This is becoming an issue today - think about Level 3**

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Among those with or without ACC or LKA, percentage who said they "frequently" or "sometimes" engage in this behavior while driving.

Behavior	Adaptive Cruise Control: WITH	Adaptive Cruise Control: WITHOUT	Lane Keeping Assist: WITH	Lane Keeping Assist: WITHOUT
Reading or sending text messages	62%	49%	62%	51%
Interacting with cell phone apps	56%	42%	54%	44%
Manually entering a phone number	52%	38%	56%	38%
Holding phone while talking	60%	50%	63%	51%
Using video chat on cell phone	39%	19%	42%	20%

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Evaluating driver eye glance behavior and secondary task engagement while using driving automation systems

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ABSTRACT

Partial driving automation systems are designed to assist drivers in some vehicle operation demands. However, modifications to the driving task that change the driver's role from that of an active participant to a passive supervisor could result in insufficient monitoring of the driving automation system and the surrounding environment. A reduced subset of driving data for 19 drivers from the Virginia Connected Corridors 50 Elite Naturalistic Driving Study was used to assess whether driver eye glance behavior and secondary task engagement were different when driver assistance systems were active compared to when they were available but inactive (n = 148). The results of this study demonstrate that drivers spent more time looking away from the road while driving automation systems were active and that drivers were more likely to be observed browsing on their cell phones while using driving automation systems. Current driving automation features require human monitoring of automation, yet the drivers of these automation-equipped vehicles are inclined to engage in secondary tasks and take longer and more frequent glances away from the roadway. It is possible that performance effects, such as omission errors or delayed reactions, may occur as a result of drivers' substandard monitoring of the driving scene.

1. Introduction

The SAE International Levels of Automation range from Level 0, no driving automation, to Level 5, full driving automation. The highest level of driving automation systems available for consumer purchase today is Level 2 (partial driving automation). Level 2 automation features are designed to assist the driver with some of the demands of vehicle operation (e.g., steering, headway maintenance) under certain situations through the use of onboard sensors such as cameras and radar. When these driving automation features are active, they support, but do not replace, a driver in performing the dynamic driving task (DDT; Llaneras et al., 2013; SAE International, 2018).

In order for the DDT to be completed successfully, all of its sub-tasks must be completed by a human driver, a driving automation system, or a combination of the two (SAE International, 2018). At Level 2 automation, the human operator is responsible for the constant supervision of the features' performance in the simultaneous completion of lateral and longitudinal vehicle control. The human operator must also execute what is known as the object and event detection and response (OEDR) sub-task, which involves monitoring of the driving environment as well as executing the appropriate response(s) to events.

The modification of the driving task by adding driving automation systems changes the role of the driver from that of an active participant to a passive supervisor and could result in insufficient completion of the OEDR. There are a number of possible reasons for expecting issues with the execution of the OEDR in this paradigm, including lack of relevant experience with the given task demands (Stanton and Young, 2005), vigilance decrements associated with reduced workload (Endsley and Kiris, 1995; Louw et al., 2017; Louw and Merat, 2017; Merat et al., 2019; Strand et al., 2014), and complacency with or overreliance on the driving automation systems (Bahner et al., 2008; Manzey et al., 2006; Singh et al., 1993a, 1993b).

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- - Current driving automation features require human monitoring of automation

- However, drivers of the automated-equipped vehicles are inclined to engage in secondary tasks and take longer and more frequent glances away from the roadway

- It is possible that performance effects, such as omission errors or delayed reactions, may occur as a result of drivers' substandard monitoring of the driving scene

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Data Access

- Individual sensor data (static and moving obstacles)
- Forwarding looking and in-cabin views
- Sensor fusion outputs (obstacle classification)
- Localization – where is the vehicle in terms of latitude and longitude
- Driving context – at intersection, lane chance, speed, etc.
- Decision-making – traffic light status, slowing down
- Current and planned path and speed profiles
- Health status of hardware and software tasks
- V2X communications

- Last 5 – 10 minutes of driving data can be readily stored

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Governors Highway Safety Association
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PREPARING FOR AUTOMATED VEHICLES: TRAFFIC SAFETY ISSUES FOR STATES

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Questions?