


UTC Project Information	
Project Title	Guiding Driver Responses during Manual Takeovers from Automated Vehicles
University	Virginia Tech Transportation Institute
Principal Investigator	Hyungil Kim
PI Contact Information	hykim@vtti.vt.edu , (540)231-4368
Funding Source(s) and Amounts Provided (by each agency or organization)	Safe-D: \$199,380 Private(match): \$150,000
Total Project Cost	\$349,380
Agency ID or Contract Number	Grant No: 69A3551747115 Project: VTTI-00-026
Start and End Dates	8/10/2019-8/9/2020
Brief Description of Research Project	Until fully automated vehicles become a reality, drivers must take over vehicle control from driving automation systems, even with little or no advance warning, when the automation encounters its operational boundaries. Empirical studies have shown that such control transitions are challenging for human drivers and traditional simple takeover requests may not be sufficient for the driver to deal with complex driving situations. This work aims to explore multi-modal human-machine interfaces (HMI) approaches to improve driver situation awareness and guide appropriate driver responses in challenging takeover situations.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	 <p>The proposed work will leverage the Virginia Tech Transportation Institute's (VTTI) virtual reality driving platform to prototype various HMI options and examine human-subjects' responses in challenging takeover scenarios. The expected outcomes of this project include</p> <ul style="list-style-type: none"> • Documentation of research findings in the form of reports, journal articles, and conference presentations • Working prototypes of various HMI concepts • Implications for design and evaluation of HMIs for takeover request in automated driving

	<ul style="list-style-type: none"> • A one-week class module for graduate-level courses entitled “Virtual and Augmented Reality for Automotive HMI Research”
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>The human-subject experiment will provide a better understanding of human-machine interaction in challenging takeover situations. The findings would further benefit original equipment manufacturers by informing future design and evaluation of HMIs to enhance driver safety, trust, and acceptance of automated vehicles.</p>
<p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project website 	<p>https://www.vtti.vt.edu/utc/safe-d/index.php/projects/guiding-driver-responses-during-manual-takeovers-from-automated-vehicles/</p>