

UTC Project Information	
Project Title	Quantitatively Evaluate Work Zone Driver Behavior Using 2D Imaging, 3D LiDAR, and Artificial Intelligence in Support of Congestion Mitigation Model Calibration and Validation (Project G2)
University	Georgia Institute of Technology
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Funding Source(s) and Amounts Provided (by each agency or organization)	STRIDE: \$107,799 ALDOT: \$32,799 GaTech: \$75,048
Total Project Cost	\$107,799
Agency ID or Contract Number	69A3551747104
Start and End Dates	August 15, 2018 – August 15, 2020
Brief Description of Research Project	<p>Work zones constitute 24 percent of non-recurring congestion (FHWA, 2014). It is important to study driver behaviors (e.g., headway, speed, lane changing, etc.) in response to actual work zone scenarios (e.g., roadway geometry, traffic, traffic control strategy, etc.) to understand the potential work zone impacts (e.g., delay/queue and conflicts) and to develop appropriate traffic control strategies to manage and/or reduce these work zone impacts. Work zone traffic simulation models have been developed to quantitatively evaluate work zone impacts by considering driving behavior (e.g., vehicle headway, speed profile, merging location and time, vehicle lateral offset, etc.) and work zone scenarios. However, the driving behavior data for the southeastern region at a detailed level to support simulation models is currently lacking; this hinders the reliability and accuracy of simulation results.</p> <p>Using video log images together with artificial intelligence provides a promising alternative for cost-effectively acquiring</p>

	<p>detailed driving behavior data (e.g., vehicle headway, speed profile, merging location and time, vehicle lateral offset, etc.). Therefore, this study focuses on assessing the accuracy of such data and quantifying the impacts of this data on the simulation outcomes. The objectives of this project are to 1) assess the accuracy of the video-based driving behavior data and the factors contributing to the errors, and 2) evaluate the impacts of such data on the simulation results. Experimental tests will be conducted using a light tower to simulate the camera configuration in a work zone to identify the factors contributing to errors in the derived driving behavior data and to quantify these errors. Other sensing technologies, such as LiDAR and laser distance measuring devices, will be used to establish the ground truth of the roadway geometry and distance between objects. Sensitivity analyses will be conducted to quantitatively evaluate the impacts of such data on the simulation results. The outcome of this project will identify and quantify the accuracy of individual driving behaviors, the factors affecting the accuracy, and the impact of such data on the simulation results.</p>
<p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p>	<p>Not available. Research is in progress.</p>
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>Not available. Research is in progress.</p>
<p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project website 	<p>https://stride.ce.ufl.edu/project-g2/</p>