



<b>UTC Project Information</b>	
Project Title	<b>Pedestrian-vehicle interaction in a CAV environment – explanatory metrics</b>
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Funding Source(s) and Amounts Provided (by each agency or organization)	
Total Project Cost	\$70,000
Agency ID or Contract Number	69A3551747105
Start and End Dates	1/1/2017 - 12/31/2019
Brief Description of Research Project	<p>The motivation for this study is to measure the interaction between pedestrians and motorists, so that the variety of expected interactions between pedestrians and autonomous vehicles can be documented. This knowledge is intended to better inform the programming of driverless vehicles and to provide guidance to officials contemplating alternative crosswalk designs.</p> <p>To seek data that would assist the experiments described above, videos of pedestrians crossing one-way streets at specially-marked crosswalks are being recorded to create an archive that can be studied to detect and document the variety of behaviors by pedestrians and motorists at semi-controlled sites. Here, “semi-controlled” means sites marked with “State Law Yield to Pedestrian Within Crosswalk” signs. [MUTCD Figure 2B-2. Unsignalized Pedestrian Crosswalk Signs] The timing of this study is quite good, because the one-way streets being videoed will soon become two-way streets, as part of a redesign of streets at Purdue’s campus. This will permit the study of the same pedestrian population at the same location under modified circumstances.</p> <p>Based on a preliminary viewing of the videos made to date, a list of metrics is being developed. The current categories are: General environment, Pedestrian behavior, Motorist behavior, and Pedestrian-Motorist interaction.</p>
Describe Implementation of Research Outcomes (or why not implemented)	The outcomes are likely to confirm that pedestrian and motorist behaviors in the street-crossing context are highly variable. For purposes of assessing the interaction between pedestrians and autonomous vehicles, a fresh look at the degree of variability – and the metrics used to measure the behaviors – will add to a knowledge crucial to AV operations in urban settings. While detailed information
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	<p>will be needed for AV applications, more aggregate metrics may be sufficient to guide traffic engineers as they consider alternative designs of street networks (one-way or two-way streets?) and pedestrian facilities. Examples of aggregate metrics are average delay to pedestrians and motorists, and relative frequency of conflicts between motorists and pedestrians.</p>
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>It is essential that we understand as much as possible about the behaviors of real pedestrians and real motorists as they interact in real street-crossing situations. The variability in the behaviors could be considerable, especially when joint behaviors are involved. The metrics used must be able to distinguish subtle differences in behaviors, while providing a basis for implementation in the programming of autonomous vehicles or in the design of city streets. The knowledge so acquired will minimize or eliminate (as much as possible) oversights that can have serious consequences.</p>
<p>Web Links</p> <ul style="list-style-type: none"><li>• Reports</li><li>• Project website</li></ul>	<p><a href="http://ccat.umtri.umich.edu">ccat.umtri.umich.edu</a></p>