



UTC Project Information	
Project Title	Non-connected vehicle detection using connected vehicles Phase 1 + 2
University	Purdue University
Principal Investigator	Dr. Srinivas Peeta, Hockema Professor of Civil Engineering
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Funding Source(s) and Amounts Provided (by each agency or organization)	Phase 1: \$76,000 (USDOT) and \$76,000 (Purdue – Cost Share) Phase 2: \$43,859 (Purdue) and \$61,855 (CCAT)
Total Project Cost	\$257,744
Agency ID or Contract Number	69A3551747105
Start and End Dates	8/1/2017 - 09/30/2022
Brief Abstract of Research Project	Connected vehicle (CV) technologies are entering the realm of deployment. They have the potential to help drivers and vehicles make safe, reliable and informed decisions, and thereby to enhance network capacity and reduce congestion. However, during the transition to CV technologies, there will be mixed traffic streams of CVs (with vehicle-to-vehicle communication capabilities) and non-CVs. To improve the efficiency and reliability of traffic operations under mixed CV environments, there is the need not only for observable CV location data, but also unobservable non-CV location/trajectory to realize efficient and reliable CV-based applications. This study proposes a hidden Markov model, which is a probabilistic inference approach, to identify non-CV locations/trajectories. This methodology will be integrated with a cooperative-situation awareness framework. The proposed model will be analyzed using real-world vehicle trajectory data to aid the situational awareness of CVs under low market penetration rates.
Most Relevant CCAT Research Thrusts	<input checked="" type="checkbox"/> Control & Operations <input checked="" type="checkbox"/> Enabling Technology <input type="checkbox"/> Human Factors <input type="checkbox"/> Infrastructure Design & Management <input checked="" type="checkbox"/> Modeling & Implementation <input type="checkbox"/> Policy & Planning
Describe Implementation of Research Outcomes (or why not implemented)	None Yet. The research is in progress.
Impacts/Benefits of Implementation (actual, not anticipated)	None yet.

<p>Web Links</p> <ul style="list-style-type: none">• Reports• Project website	<p>ccat.umtri.umich.edu</p>
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