

UTC Project Information	
Project Title	Segmenting, Grouping and Tracking Vehicles in LIDAR Data
University	Ohio State University
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Funding Source(s) and Amounts Provided (by each agency or organization)	\$29,821: NEXTRANS Center / USDOT \$59,035: The Ohio State University
Total Project Cost	
Agency ID or Contract Number	DTRT12-G-UTC05
Start and End Dates	1/1/2013 -
Brief Description of Research Project	<p>Roadway congestion impacts almost all aspects of our lives in the US, from safety, to the environment, to the quality of life, to the cost of goods and services. A comprehensive understanding of the traffic conditions over space that give rise to congestion remains elusive. To date, these issues have been studied predominantly with macroscopic data from point detectors (e.g., loop detectors) aggregated over fixed time periods ranging from 20 sec to 15 min. Many new theories have emerged in recent years to explain several on-going anomalies in traditional traffic flow theory. At the core of these new theories is the presence of non-trivial disturbances that last far less than the fixed time aggregation periods commonly used to study traffic, and thus, these micro-disturbances have not been empirically observed. If these theories are proven empirically, they should lead to better congestion management and control.</p> <p>The proposed research seeks to develop the tools to measure traffic flow at a resolution sufficiently precise to measure the micro-disturbances and prove or disprove the traffic flow theories that depend on their presence. Under support from NSF and FTA, OSU has developed an instrumented probe vehicle that includes positioning sensors (DGPS and inertial navigation) and ranging sensors (six LIDAR, one radar). The focus of the RNS is</p>

	<p>the one forward facing and one rear facing LIDAR sensors. These LIDAR collect a rich, 180° scan out to 80 m, in a plane approximately 0.5 m above the roadway, at 40 Hz. Although hundreds of hours of data have been collected, the tools to automatically reduce this vast quantity of data to useful information still need to be developed. The proposed research would undertake the task of segmenting the vehicle returns from the non-vehicle objects in the LIDAR data, grouping the vehicle returns into discrete vehicles, and tracking the resulting vehicle groups across scans. Once these tools are developed, they would be used to mine hundreds of hours of existing instrumented probe vehicle data.</p>
<p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p>	
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	

Web Links <ul style="list-style-type: none">• Reports• Project website	