

<b>UTC Project Information</b>	
Project Title	Reference Machine Vision for ADAS Functions
University	Texas A & M University
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Funding Source(s) and Amounts Provided (by each agency or organization)	TTI: \$340,160 (Includes \$100K Matching)
Total Project Cost	\$340,160
Agency ID or Contract Number	Grant No: 69A3551747115 Project: 04-115
Start and End Dates	Jan 1, 2019 - Dec 31, 2020
Brief Description of Research Project	Studies have shown that fatalities due to unintentional roadway departures can be significantly reduced if Lane Departure Warning (LDW) and Lane Keep Assist (LKA) systems are used effectively. However, these systems are not yet popular because the systems are not robust due, in part to the lack of suitable standards for pavement markings that enable reliable functionality of the sensor system. The objective of this project is to develop a reference Lane Detection (LD) system that will provide a benchmark for evaluating different lane markings and perception algorithms. The project will also validate the effectiveness of lane markings as well as the vision algorithms through a systematic development of LD metrics, and testing of LD algorithms in a robust test/vehicle environment.
Describe Implementation of Research Outcomes (or why not implemented)  Place Any Photos Here	<p>The final report will cover the following deliverables for the project.</p> <p><i>Deliverable 1:</i> Literature review of the all the existing lane detection technologies.</p> <ul style="list-style-type: none"> <li>• Plan to review the research publications, patents and company products.</li> <li>• Prepare a paper to be submitted to one of the upcoming ITS conferences.</li> </ul> <p><i>Deliverable 2:</i> Report on the lane detection goodness metrics.</p> <ul style="list-style-type: none"> <li>• Plan to document how a lane is defined and characterized from the literature review.</li> <li>• Develop metrics to compare the lane detection algorithms to be tested.</li> </ul>

	<p><i>Deliverable 3:</i> Reports on the three iterations of the lane detection system (produced every six months).</p> <ul style="list-style-type: none"> <li>• Plan to develop the lane detection system in three iterations.</li> <li>• The first iteration will consist of data collected driving in college station and nearby areas.</li> <li>• The second iteration will consist of data collected at Rellis.</li> <li>• The third iteration will use new materials from 3M.</li> </ul> <p><i>Deliverable 4:</i> Report documenting all the algorithms with the results obtained for different datasets.</p> <ul style="list-style-type: none"> <li>• Prepare quarterly and yearly reports of the project.</li> </ul> <p><i>Deliverable 5:</i> Course materials, papers, presentations developed for the EWD and the T2 plan.</p> <ul style="list-style-type: none"> <li>• Document the datasets collected in the experiments.</li> <li>• Prepare homework modules for the relevant courses.</li> <li>• Document all the papers, presentations, reports generated in the project.</li> </ul>
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>The project will result in the development of lane detection metrics, test protocols, benchmarked annotated and public datasets. These outputs has the potential to convince the technology manufactures, sensor companies and the market to corroborate the performance of any lane detection algorithm or marking.</p>
<p>Web Links</p> <ul style="list-style-type: none"> <li>• Reports</li> <li>• Project website</li> </ul>	<p><a href="https://www.vtti.vt.edu/utc/safe-d/index.php/projects/reference-machine-vision-for-adas-functions/">https://www.vtti.vt.edu/utc/safe-d/index.php/projects/reference-machine-vision-for-adas-functions/</a></p>