

Test Scenarios for Green ADAS

Relevance to the Automotive Industry:	With the increasing cost of fuels, the cost of vehicle ownership is increasing, which discourages and even inhibits individual mobility for increasingly more customers. To maintain or grow the number of customers that can afford individual mobility, the automotive industry is therefore pursuing research to increase the efficiency of vehicles. One potential solution is “green” Advanced Driver Assistance Systems (ADAS) that help to increase efficiency and hence reduce fuel consumption. Hence there is a need for setups that can be used for simulation as well as real testing to evaluate and compare such assistance systems.	
Research Location:	TUD Fahrzeugtechnik (FZD)	
Homepage (Engl.):	http://www.tu-darmstadt.de/fzd/index_en.html	
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Project Description: May 21 - Jul 13, 2012; (8 weeks, 40h/week)	<p>The described project is part of the research project <i>eco₂DAS</i>. The goal of <i>eco₂DAS</i> is to develop a universal system architecture for ecological and economical driver assistance systems. To evaluate this new approach and to compare it with already existing assistance systems for fuel/energy saving, representative test scenarios are needed. This NSF REU project will therefore be developing a test scenario catalogue for this purpose.</p> <p>This NSF REU project will consist of several stages: First, the NSF REU student will work with his or her graduate mentor to identify and analyze relevant requirements for such test scenarios. This includes defining the relevant parameters and characteristics that describe each scenario. Next, based on these requirements, the test scenarios will be modeled. Finally, the test scenarios will be implemented within the simulation tool <i>IPG CarMaker</i>.</p>	
Target publications:	<ul style="list-style-type: none"> • ITS World Congress 2013 • IEEE Intelligent Vehicles Symposium 2013 	
Necessary Skills/ Knowledge:	<ul style="list-style-type: none"> • High motivation to work independently • Willingness to familiarize with the simulation tool <i>IPG CarMaker</i> • MATLAB/Simulink 	
Desirable Skills/ Knowledge:	<ul style="list-style-type: none"> • <i>IPG CarMaker</i> • Basic knowledge of advanced driver assistance systems (ADAS) 	
Additional Online Resource(s):		

NSF REU Students must have completed at least two semesters of engineering studies prior to the proposed summer research, and they must have at least one semester remaining before they can earn their BS in Engineering.