

Virtualizing and Validating the Griesheim Airfield Test Track

Relevance to the Automotive Industry:	Product testing is an integral part of the engineering design and development process. An increasing amount of this testing is done earlier in the design process using virtual prototyping and simulation. This enables more product testing, faster, sooner, and at less expensive than what is possible in physical prototyping and product testing. The result is faster product introduction with improved quality.	
Research Location:	TUD Institute for Automotive Engineering (FZD)	
Homepage (Engl.):	http://www.fzd.tu-darmstadt.de	
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Project Description:	<p>The Institute for Automotive Engineering (FZD) conducts research on safety assurance in highly automated driving. Major research projects include PEGASUS (funded by the German Federal government) and ENABLE-S3 (funded by the European Commission). One task within these projects is for FZD to develop simulation models of environment perception sensors such as radar, lidar, and ultrasonic sensors. These models need to be validated against the real-world.</p> <p>The objective of this NSF REU project is to build an accurate virtual representation of the FZD test track at the August-Euler Airfield in Griesheim, and encode it in the Virtual Test Drive (VTD) software simulation system, such that the above simulation models can be validated. Three NSF REU students will collaborate on this project together with graduate researchers at FZD.</p> <p>PHASE A (2-3 weeks): During this introduction phase, the students will review relevant research, and investigate existing software (Vires VTD / Road Designer).</p> <p>PHASE B (3 weeks): Next, the students will measure the test track and recreate a virtual, graphical representation of the test track in VTD.</p> <p>PHASE C (3 weeks): Next, the students will support virtual and real-life test runs to validate their work and the associated simulation models.</p> <p>PHASE D (1-2 weeks): Finally, the NSF REU student will document the research performed, prepare a written report to support subsequent publications, and deliver an end-of-summer presentation on the research performed.</p>	
Jun 06 - Aug 11, 2017 (10 weeks, 40 h/week)		
Target publications:	<ul style="list-style-type: none"> • FAS Workshop of UniDAS e.V., Walting, Germany, September 2018 • IEEE International Conference on Intelligent Transportation Systems (ITSC) 2018 	
Necessary Skills/ Knowledge:		
Desirable Skills/ Knowledge:		
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.