VTI is looking for one (or possibly two) master thesis student in the field of system identification and bicycle dynamics modelling. VTI conducts research in driving simulation, vehicle dynamics, tire characteristics and have several unique equipment including three driving simulators and a test rig to measure the tire-road friction. The objective of the master thesis project is to investigate existing log data from a bicycle treadmill experiment and try to identify characteristics of the rider. The project will be performed in cooperation with Chalmers University.

VTI

VTI, the Swedish National Road and Transport Research Institute, is an independent and internationally prominent research institute in the transport sector. Its principal task is to conduct research and development relating to infrastructure, traffic and transport and its operations include all modes of transport. VTI has a total of some 200 employees. The institute is a government agency under the Swedish Government.

Background

Understanding riders of bicycles is central to the understanding of traffic safety in general. In a previous project at VTI, riders’ behavior has been studied under the influence of alcohol. Statistical measures of test persons have been derived from their immediate response to the bicycle dynamics, such as leaning angle etc. These measured were then used to quantify the difference in behavior between riders with and without the influence of alcohol.

The main idea behind of the current MSc thesis project is to revisit the previously recorded data and try to use a model-based approach to identify the rider as a dynamic controller. The parameters of this controller, expressed in understandable quantities, will then be the bases for the statistical comparison between the two conditions.

Qualification

You are a self-sufficient person that can make your own decisions and work independent. Successful candidate(s) should have a good knowledge in physical modeling and simulation as well as basic programming skills (Matlab and Simulink). It is central to have a clear understanding of the engineering field of system identification.

Application instruction & information

Send your application (incl. CV & transcript) to: fredrik.bruzellius@chalmers.se

Questions on the project should primarily be sent to Fredrik. From VTI’s side Jan Andersson jan.andersson@vti.se (experiment and human factors) and Olle Eriksson olle.eriksson@vti.se (statistics)