Research project
Identification and evaluation of requirements on data for driver profiling

Research project title Identification and evaluation of requirements on data for driver profiling	
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Keywords driver profiling, driver behaviour, data analysis, automated driving	
Mandatory requirements • Proficiency with MATLAB, R, and good analytical skills • Fluency in English • Good statistics skills *Optional requirements* • Knowledge of Bayesian modelling is of advantage	
Workplace This is a research project to be performed at Chalmers University of Technology, within the Crash Analysis and Prevention group in the Department of Mechanics and Maritime Sciences (division of Vehicle Safety). The workplace will be SAFER, located at Lindholmspiren 3.	
Learning objectives • Plan and perform analysis of naturalistic driving data • Develop theories on driver behaviour and apply them in modelling • Apply various statistical methods • Formulate results in a scientific report	
Highlight • Work with a relevant and current research topic (driver profiling)	
Number of students 2	Scholarship provided Yes, at completion of Master's thesis

Background

Veoneer Research use the platform LIV in order to explore and understand how driving may evolve in the future. LIV is a vehicle developed around the driver, with a focus on collaboration between driver and vehicle. This collaboration assumes a certain measure of knowledge of the other party, including their habits, preferences and skills.

To support this collaboration, it necessary to characterize each drivers' individual driving behaviour in ordinary situations and derive a model for the behaviour that can be run in real-time in a vehicle. Students are expected to make use of all available data sources for a model development, as well as suggest possible additions to the data collection. Students will through modelling drivers' normal behaviour also flag when the driver does something out of the ordinary, as well as suggest when this out of the ordinariness has passed. Variables used are e.g. vehicle controls, GPS and additional external data sources.

Objective

The Master's Thesis objectives are:

- Define, model, and evaluate normal driving based on available data
- Determine data quality and quantity to differentiate between different drivers
- Describe requirements on data for the identification of specific driver characteristics

Research project work

The student(s) will plan, design, and conduct data analysis and model building based on different data sources.

The detailed plan of the research project includes the following steps:

1. Review literature about evaluation of normal driving from naturalistic data
2. Model driver behaviour
3. Identify relevant driver characteristics
4. Analyse driver characteristics variability and in-between driver characteristic variability
5. Formulate requirements on data to achieve a certain level of confidence in data segregation
6. Write the final thesis report