T1.18 Driver models and mission-based driving cycles

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Summary

The T1.18 project is a collaboration between Linköping University and the Swedish National Road and Transport Research Institute. The aim of the project is to prepare an application on the topic of “driver models and mission based driving cycles”. The project budget is 200 000 SEK and will be carried out during the period April-September 2015.

In recent years, various studies have been undertaken to develop methodologies for generation of representative driving cycles that reflect the real world driving conditions. There are different factors that affect the real world driving patterns, such as vehicle type, driver and traffic condition; thus, for a comprehensive assessment of powertrains, there is a need for driving cycle generation methodology which takes into account all these factors. This need will be addressed in the prospective application which will be focused on defining representative driving missions (including e.g. road types, obstacles and traffic conditions) and generating the speed profiles for the defined driving missions using driver models.

General project description and background

The project is a joint work by Linköping University (LiU) and the Swedish National Road and Transport Research Institute (VTI), with the objective of writing an application on the topic of “driver models and mission based driving cycles”. During the course of the project, existing literature in this field has been studied and the areas in which further research is needed have been identified. The preparation of the application has started and the aim is to submit an application either to next SHC call in Autumn 2015 or to “FFI - Elektronik, mjukvara och kommunikation” call in mid-September 2015. The methods for development of verification and validation is listed as one of the focus area of this FFI call, which is very relevant for the topic of this research.

Achieved results

The existing literature in the field of stochastic generation of driving cycles has been reviewed, as well as the existing knowledge in the field of driver behaviour modelling in microscopic traffic simulation. Some of the identified areas for further research are generation of a driving mission with similar statistical properties as naturalistic driving data, identification of the key parameters of the driver behaviour models for generation of driving cycles and estimation of the driver model parameters.

The preparation of the final application has started and is under progress. Possible collaborations with industry is under investigation; in the SHC workshop 4 on driving cycles, the possibility of joining efforts with the OCEAN project to complement it with driver aspect was discussed.

Timing and finance

The total project budget is 200 000 SEK, 100% of which is funded by SHC. The project time period is April-September 2015.

Executors and collaboration

The project has been carried out by Sogol Kharrazi, VTI, in collaboration with Lars Nielsen and Erik Frisk at LiU.

Dissemination of Results

The project results has been presented at SHC workshop: WS4 Driving cycles. The resulting application to SHC/FFI will be a public document.

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