

Behavioural adaptation in response to Advanced Driver Assistance Systems

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Abstract

Advanced Driver Assistance Systems (ADAS) represent systems that provide information and/or support to the driver in his/her driving task. The aim of ADAS is to increase traffic safety and efficiency, as well as enhance drivers' comfort through automation of some or in the (far) future (perhaps) all, aspects of the driving task. Although positive expectations from ADAS implementation in increasing road safety are reported, there are still a lot of questions to be answered about the successfulness of ADAS in fulfilling those expectations. In the light of that, one of the factors that represents a relevant issue in the development and deployment of ADAS is the phenomenon of behavioural adaptation (BA). BA has been defined as "those behaviours which may occur following the introduction of changes to the road-vehicle-user system and which were not intended by the initiators of the change", and is significant because of its potential to reduce the effectiveness of ADAS by diminishing their overall safety effect. This study focuses on those effects of ADAS on driving behaviour representing BA in response to ADAS. In this paper, the implementation of Rasmussen skill-rule-knowledge framework as a potential approach to the problem of BA is discussed and the research strategy for constructing the model of behavioural adaptive changes is presented. This model should serve as a tool enabling prediction of behavioural changes induced by certain ADAS.

Advanced Driver Assistance Systems

Very soon after the introduction of the motorised vehicle on the road system, which was till then specifically equipped for carriages, the inadequacy with respect to safety and efficiency for motorised traffic emerged. Since then, over all these years a variety of improvements has been introduced to the vehicle-road-user system in an attempt to increase traffic safety and efficiency. One of the latest changes, introduced in the last decade, is the rapidly growing inclusion of electronics in the form of Advanced Driver Assistance Systems (ADAS). ADAS are systems that provide information and/or support to the driver in his/her driving task. The aim of ADAS is to increase traffic safety and efficiency as well as enhance drivers' comfort through automation of some or in the far future perhaps all, aspects of the driving task.