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## Recognition of the traffic conditions with onboard sensors

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**Abstract:** Real time recognition of traffic conditions could be applied as the basis for diverse driver assistance systems to adapt driving strategy. In this paper, different conditions in highway traffic are defined and recognised by an algorithm working with only vehicle onboard sensors. This algorithm is firstly developed and validated in the traffic simulation programme PELOPS and then implemented in an experimental vehicle. Simulation and real road tests show that this algorithm is capable of recognising diverse traffic conditions precisely.

**Keywords:** advanced driver assistance system; onboard sensor; PELOPS; traffic conditions; traffic density; traffic quality; traffic simulation; traffic volume; vehicle information.

Referenceto this paper should be made as follows: Chen, J. and Benmimoun, A. (2008) 'Recognition of the traffic conditions with onboard sensors', Int. J. Vehicle Information and Communications Systems, Vol.1 , Nos.3 /4, pp.320 - 333

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Ahmed Benmimoun studied automotive engineering at RWTH Aachen. Since 2001 he has been a scientific assistant in the driver assistance department of IKA and became the head of this department in 2005. He is working on development and assessment of driver assistance systems and investigation of driver performance and behaviour.

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### 1 Introduction

In recent years traffic volume has increased continuously, and this trend can be expected to persist. Meanwhile, it is almost impossible to extend the road network for ecological and economic reasons. In order to avoid the collapse of traffic, it has to be regulated flexibly. So that the available traffic capacity could be used more efficiently, new technologies will be needed to contribute to improve traffic efficiency as well as safety.