

Abstract

Driver workload increases constantly. Higher traffic density, longer driving times and more complex control elements in the vehicle have got a negative effect on reception and information processing of the driver and increase the risk of accidents. The measurement of driver workload could help to solve the problem and - as an independent driver assistant system - it could generate warnings in critical situations. Being informed about the driver's actual condition could also be useful for the development of new vehicle systems and the optimization of the human-machine-interface.

Since workload is a dimension which is on the one hand clearly affected by external stimuli, but on the other perceived differently and subjectively by the individual and can not be measured directly, we seize and evaluate physiological workload indicators instead. Above all the appropriateness and the reliability of the continuously measured blood pressure as a new indicator are examined and compared to established parameters in psycho-physiological research. With the help of these indicators a new parameter can be determined which can quantify the current state of driver workload.

For the measurement of the considered signals a new sensor system designed especially for the use in motor vehicles is introduced. The continuous registration of blood pressure is based on a method which is suggested from BARSCHDORFF ET AL. [Ba98, Ba00] and extended and improved in this work.

Parts of the results of this work were presented at different national and international conferences [Ba05a, Ba05b, Ba06, Ba07, Ba08].