

Semi-autonomous Advanced Parking Assist – a source of drivers' distraction?

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Abstract

Advanced Parking Assists (APA) have been introduced in the market in order to reduce the driver's effort while parking. However, the systems' displays may attract drivers' visual attention up to 80% of the parking manoeuvre (Doisl, 2007). Therefore, passers-by or obstacles in the pathway of the vehicle might be overlooked. In the present study, N = 18 subjects parked parallel in a test area (18 manoeuvres) and in real traffic (9 manoeuvres). In some of the manoeuvres in the test area, staged situations were realized in which obstacles were positioned in the vehicle's pathway. One half of the manoeuvres was done without the parking assist, one half with a semi-autonomous APA system which utilized automatic steering. The APA system did not control speed by accelerating or braking. While parking with APA the subjects do not look as often into the rear windows as with manual parking: Visual attention is focused on the display. However, the display glances are mostly shorter than 1s duration and do not have any negative impact on safety while backing up. There is no detrimental effect of the APA system in the staged situations. Therefore, positive effects of the APA system prevail.

Introduction

In recent years an increased research and development activity in the field of Advanced Parking Assists (APA) could be seen. The range of APA systems varies from information systems (e.g. solely distance control or parking space measuring) to full-autonomous parking assists (automated steering and speed control; for an overview see Lambert, Kirchner & Hueger, 2008). Some of those systems have already been introduced to the market, especially in the area of distance control. Nowadays, mainly ultrasonic systems inform the driver via acoustic sounds and/or visual displays about the distance to objects or to cars which restrict the parking space. At present, semi-autonomous APA systems for parallel parking represent the most advanced type of parking assist systems on the market. While steering is controlled solely by the system, the driver receives via displays a step by step instruction on how to motion the vehicle (accelerating and braking).

In D. de Waard, A. Axelsson, M. Berglund, B. Peters, and C. Weikert (Eds.) (2010). *Human Factors: A system view of human, technology and organisation* (pp. 377 - 386). Maastricht, the Netherlands: Shaker Publishing.