

Ergonomics in the Development of an In-Vehicle Interactive System

Catherine Harvey

University of Southampton and Jaguar Cars Ltd.

Southampton, UK

c.harvey@soton.ac.uk

Introduction

Today, car drivers are able to control many aspects of the vehicle environment, including communication, physical comfort, navigational aids, and 'infotainment'. The introduction of these new interactive technologies has inevitably meant a vast increase in the number of secondary controls within the car.

Background

Two main solutions have emerged in an attempt by automotive manufacturers to combine secondary controls into a single interactive system: touch screen (as used by Jaguar Cars Ltd., see figure 1) and central control technologies. Both of these systems have succeeded in reducing the cluttered effect produced by locating a large number of controls separately on the car dashboard; however using these systems places visual, manual and cognitive demands on the driver, leading to increased eyes-off-road and hands-off-wheel times. These factors contribute to an overall increase in driver distraction. In recent years the issue of driver distraction has been highlighted as a major factor in driving safety and with the increasing trend in the use of portable devices within the car, such as MP3 players and mobile phones, it is critical that attempts are made to reduce the number of potential distractions to the driver.



Figure 1: Touch screen in the Jaguar XF

Research Objectives

The initial aim of this project is to investigate current in-vehicle interactive technologies in order to identify areas for improvement, with a particular emphasis on safety and ergonomic issues. Information about the ways in which vehicle users operate secondary controls whilst driving will be collected and used to develop an evaluation methodology for in-vehicle interactive systems. This will provide a 'filter' for potential design concepts. Design concepts which pass through the initial evaluation phase will be tested using the Instrumented Vehicle developed by the University of Southampton's

Transportation Research Group (see figure 2) in a series of user trials. This research will provide a foundation for the possible development of an improved concept for an interactive technology which reduces driver distraction to a safe level. It is expected that the final design will incorporate a number of human machine interaction (HMI) modalities, resulting in a multi-modal in-vehicle interactive system.

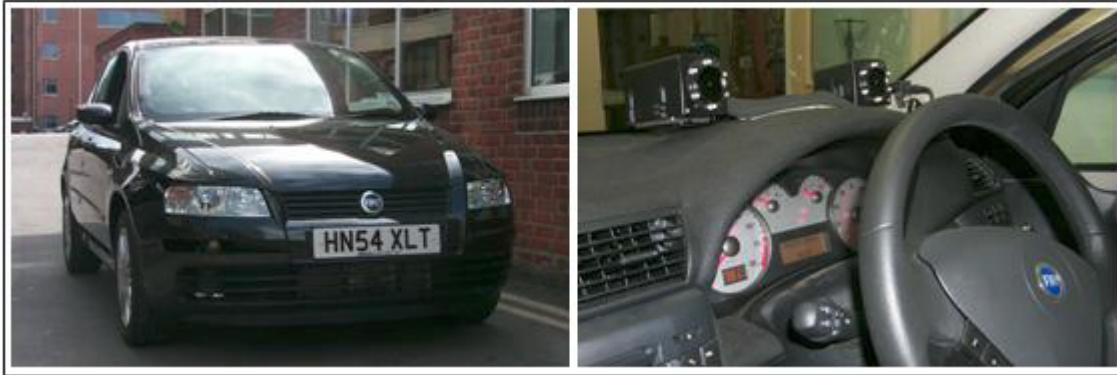


Figure 2: The Instrumented Vehicle developed by TRG, University of Southampton