The Entrepreneurial University.

Technische Universität München

Press release

4 August 2011

Virtual assistant supports car drivers:

AviCoS replaces vehicle owner's manuals

Flashing signal lamps and unfamiliar control elements tend to worry car drivers. The Avatar-based Virtual Co-driver System (AviCoS) will provide drivers with information directly and on-demand, making cumbersome paging through owner's manuals a thing of the past. The AviCoS system reacts to a touch of the control elements and via a natural-language interface. A virtual assistant, the avatar, dispenses explicit information on the vehicle – supported by images and videos. The system was developed by the Technische Universitaet Muenchen Institute of Business Informatics in cooperation with Audi AG.

The avatar is displayed on the monitor of the Audi Mulitmedia Interface that comes standard in all new Audi models. The virtual figure understands complete sentences. Using artificial intelligence, AviCoS interprets questions by the vehicle occupants and answers in spoken language. The driver can view descriptive images or videos on-screen and the avatar points to the relevant areas during the explanation.

A further option – in addition to speech – for communicating with AviCoS is a Touch&Tell mode. If a driver is unfamiliar with a specific control element, a simple touch is all it takes to cue the avatar to provide background information on the function in question. "This is a tool to explain control elements in an quick and easy, hands-on way. It is particularly useful in unfamiliar vehicles," says Professor Helmut Krcmar, Chair of the TU Muenchen Institute of Business Informatics.

Underway at high speeds

AviCoS can also be used while driving. To avoid distracting the driver's attention from traffic, as the vehicle speed increases, first the animations and later all graphical output is suppressed. Albeit, voice communication with the avatar remains available at all times.

Investigations carried out in the context of the research project attest to the virtues of AviCoS. Compared to looking up information in the owner's manual, car drivers can find the information they need faster and more accurately. And AviCoS is simply more fun to use. "Overall, AviCoS provides comfortable and interactive access to multimedia content that goes far beyond the information contained in printed manuals. The self-explanatory system can be used without training, making it easy to get familiar with the operation of a vehicle," says Dr. Michael Schermann, director of the Automotive Services research group at the Institute for Business Informatics.

Technische Universitaet Muenchen Corporate Communications Center 80290 Munich, Germany www.tum.de

Dr. Ulrich Marsch	Head of Corporate Communications	+49 89 289 22779	marsch@zv.tum.de
Dr. Andreas Battenberg	PR Campus Garching	+49 89 289 10510	battenberg@zv.tum.de

Language as a mood meter

The natural language interaction between drivers and vehicles will be extended in the future. The vision: A system that recognizes and adapts to the driver's state of mind. AviCoS analyses the driver's tone of voice and speech rhythm to determine if the driver is challenged by the current traffic situation. When it detects that the driver is stressed, it reduces the degree of multimodal output, e.g. by suppressing animations. Other devices in the car, such as electronic navigators, can also be integrated by indicating the directions earlier on and more frequently.

AViCoS was developed in the context of a three-year research project. The Department of Process and System Integration for Electrical and Electronic Systems of the Audi AG and the TU Muenchen Institute of Business Informatics took part in the project. The researchers worked at the TU Muenchen Regional Competence Center INI.TUM. This branch of the TU Muenchen, located in Ingolstadt, works in close collaboration with Audi AG to foster and strengthen the link between science and business.

Further information

www.automotive-services.org/cms/

The results of this work have been published in the 20-volume Audi Dissertation Series "Gestaltung avatarbasierter, natürlichsprachlicher Hilfesysteme für den Einsatz in Fahrzeugen" ("Design of avatar-based, natural-language support systems for deployment in automotive vehicles") by Dr. Valentin Nicolescu.

Contact

Prof. Helmut Krcmar
Technische Universitaet Muenchen
Institute of Business Informatics
Boltzmannstraße 3, 85748 Garching, Germany
Tel. +49 89 289 19532
E-Mail: Krcmar@in.tum.de – Internet: http://wwwkrcmar.in.tum.de/

Technische Universitaet Muenchen Corporate Communications Center 80290 Munich, Germany www.tum.de

Dr. Ulrich Marsch	Head of Corporate Communications	+49 89 289 22779	marsch@zv.tum.de
Dr. Andreas Battenberg	PR Campus Garching	+49 89 289 10510	battenberg@zv.tum.de