

AviCoS replaces vehicle owner's manuals

August 4 2011



Displayed on the monitor of the Audi Multimedia Interface that comes standard in all new Audi models, an avatar supports the driver with explicit information on the vehicle in a natural-language dialog -- supported by images and videos. The system can be triggered by spoken questions or by touching controls, making cumbersome paging through owner's manuals a thing of the past. Credit: Institute of Business Informatics, Technische Universitaet Muenchen

The avatar is displayed on the monitor of the Audi Multimedia 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.

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.

Provided by Technische Universitaet Muenchen

Citation: AviCoS replaces vehicle owner's manuals (2011, August 4) retrieved 24 April 2024 from <https://phys.org/news/2011-08-avicos-vehicle-owner-manuals.html>

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