

CommuterNews: A Prototype of Persuasive In-Car Entertainment

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ABSTRACT

CommuterNews is a prototype of an in-car persuasive entertainment system developed by the Stanford Persuasive Technology Lab in collaboration with DaimlerChrysler. The system presents daily news stories in the form of multiple-choice questions and short relevant sound clips selected from a standard broadcast story. By asking questions about the content before hearing the story, CommuterNews motivates the driver to actively engage themselves while gathering the news.

Keywords

Embedded systems, interactive news, in-car entertainment, persuasive technology, speech recognition, user testing

INTRODUCTION

Automobiles have become a new domain for computing applications. Recent developments such as Clarion's AutoPC [1], in-car GPS guidance systems, and the development partnership between Sun and General Motors [2] have started to bring computing power off the drawing board and accessible from the driver's seat. Drivers can now check e-mail, appointments, and find the nearest hotel. In addition, entertaining back-seat drivers through technology is moving beyond luxury, and a new minivan even comes standard with a TV and VCR. However, there have been few attempts to use computer technology in a vehicle for the explicit purpose of both entertaining and informing the driver.

The Stanford Persuasive Technology Lab, in collaboration with the DaimlerChrysler Palo Alto Research and Technology Center, recently developed CommuterNews. The system is a prototype of speech-driven persuasive in-car entertainment. CommuterNews presents radio news in a new, interactive format with the goals of:

- Entertainment
- Information
- Persuasion

While traditional broadcast news presents stories to a passive listener, CommuterNews engages the driver with questions and relevant clips selected from a standard 3-4 minute radio news story. The system keeps track of how many questions have been answered correctly and gives the driver opportunities to earn prizes and compete with other CommuterNews players. The session can be interrupted at any time, but a typical interaction with the prototype (4 news stories, with 4-5 questions per story) approximately correlates to an average commute of 20 minutes [3]. The idea of interactive in-car entertainment for drivers is not one without controversy; safety considerations were integral in our design process.

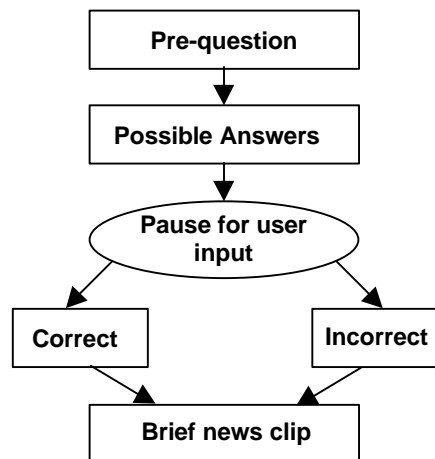


Figure 1: The flow of CommuterNews interaction, repeated 4-5 times per story

PERSUASIVE INTENT

CommuterNews was designed to actively engage drivers in the daily process of gathering the news. The traditional forms of news delivery — television, radio, and newspaper — all broadcast to a listener often preoccupied with other matters. In these traditional formats, even if a person is able to devote their full attention to the stream of news,

cognitive engagement can be relatively low, and few opportunities allow the listener to relate new information to previously known content.

The structure of CommuterNews (see Figure 1) was designed to combat passive news absorption and persuade drivers to take personal charge of learning new content. The traditional 3-4 minute broadcast story is never played in its entirety with CommuterNews. Instead, the driver is asked a set of multiple-choice “pre-questions”: questions not based on simple recall but rather educated guesses. The driver receives feedback on the correctness of their answer, and only then hears a 15-45 second clip taken from the standard broadcast version of the story. The clip is directly relevant to the question, delivering the answer and a varied amount of additional information. This process is repeated for 4 or 5 questions on the same story, and, before moving on to the next story, CommuterNews presents drivers with an action to become more involved in that story’s subject area. For example, the story on drunk driving demonstrated in the prototype offers the driver an opportunity to connect with the chapter of Mothers Against Drunk Driving that is local to his or her area. This additional information, presented at the relevant time, reduces barriers between the driver and any desire to take action.

SPEECH INTERACTION

An audio interface was a requirement for this in-car project. Most everyone has observed drivers disregard safety while eating, phoning, or grooming behind the wheel, and any implementation of in-car computing that calls on the driver to divert their eyes from the road is inviting consumers to further multitask the driving experience [4]. With regard to technical specifications, the computing power required for CommuterNews’s speech recognition is not demanding. By design, input commands are purposely limited to simple phrases necessary to effectively answer questions: “a”, “b”, “c”, “d”, “true”, “false”, “pause”, and “repeat”.

PRELIMINARY USER TESTING

The CommuterNews prototype was tested on approximately 20 users, with a number of these tests occurring in an in-car driving situation (see Figure 2). Users were questioned on the prototype’s enjoyability, easy-of-use, degree of question difficulty, question variety, and potential distraction from safe driving. Several recurring themes emerged from these preliminary tests. Users found the experience of using CommuterNews to be an interesting alternative to the other forms of in-car entertainment, such as listening to the radio. Most users also said they learned a great deal from the sample news stories demonstrated in the prototype. The questions tested were at the appropriate level of difficulty, though many people also expressed a desire for greater question variety than multiple-choice and true/false. With regard to safety,

user tests showed that the major issue with no clear consensus was the ability to drive safely and engage in CommuterNews. Approximately half of users tested expressed no problems with their ability to do both tasks simultaneously, while a similar number of users expressed some level of hesitation about attempting both at the same time. Most of the preliminary user tests did not occur in a driving situation, however, and most users tested could only estimate their ability to effectively drive and use the system.



Figure 2: User testing in the car

FUTURE WORK

Further user testing on the CommuterNews format will be conducted, with the majority of tests occurring in actual commuting situations. One issue that clearly needs further exploration is the cognitive balance between driving and using the system. On the technical side, CommuterNews is being installed on the DaimlerChrysler prototype Internet car, where specific issues relating to downloading and streaming CommuterNews’s questions and news clips will be explored.

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