Advisory Cruise Control Device for an Intelligent Vehicle-Highway System

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ABSTRACT
The Intelligent Vehicle-Highway System in this paper is built for a Cooperative Adaptive Cruise Control system. In this system, vehicles communicate with each other through wireless means, where they coordinate each other's speed for better traffic flow. In this paper, we describe the design and evaluation of the interface where they coordinate each other's speed for better traffic flow. In this system, the Intelligent Vehicle-Highway System in this paper is built for experimentation, human factors, verification, management, measurement, performance, design, and tested. Preliminary study and several visual and audio design iterations resulted in two prototypes. They both inform users about speed choice in three states {Too Fast, Appropriate, Too Slow}. In the Guidance prototype, users are only presented with visual feedback, while in the Explanation prototype, additionally users are presented with icons and can interact with buttons for more information (explanation/consequences).

2. PROTOTYPES
In order to answer the question of what, how, and when to present advice from a CCC device, several prototypes were developed and tested. Preliminary study and several visual and audio design iterations resulted in two prototypes. They both inform users about speed choice in three states {Too Fast, Appropriate, Too Slow}. In the Guidance prototype, users are only presented with visual feedback, while in the Explanation prototype, additionally users are presented with icons and can interact with buttons for more information (explanation/consequences).

A preliminary study through two focus groups of 10 and 11 participants showed a preference for advisory over automatic systems. Moreover, participants considered information about traffic jams, unavailable roads, traffic density, environment (speed limit, safety level, traffic regulation, etc) as important. In the case of an advisory system, participants wanted to know the reasons for the system’s advice. Participants strongly disliked intrusive auditory signals, so visual feedback was considered. To increase multitasking ability [3], the visual feedback should be glanceable.

3. REFERENCES