Exploring HCI for Autonomous Driving

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Personal information

I am an Associate Professor of Electrical and Computer Engineering at the University of New Hampshire. My primary area of research is in-vehicle user interfaces. Since 1999 I have been involved in various aspects of research and development in the automotive domain. First, I participated and then led the Project54 effort at the University of New Hampshire in which we integrated in-vehicle devices in police cruisers (such as the police radio, radar, and video recorder) into a single system. The system was accessible via speech, GUI, as well as the original hardware interfaces of the in-vehicle devices [5]. This effort was followed by work on driving simulator-based studies on topics such as speech interfaces and navigation devices (e.g. [2, 4]).

I have also been active in the research community, having acted in various capacities at the AutomotiveUI conference, including as general chair in 2012 [3], and most recently as Workshops co-chair [7]. I have also co-organized a number of workshops, and am co-organizing a course at CHI 2016 that will provide an introduction to automotive user interfaces [6].

Autonomous Vehicle Research Experience

My efforts in autonomous vehicle research are very recent, and to date they have focused on outlining possible fruitful avenues of activity. As such, I am the co-author of a new IEEE Pervasive paper that proposes four challenges for research in the area of autonomous

vehicles [1]. With my co-authors Susanne Boll and Albrecht Schmidt we state that "[t]he automated driving revolution is changing automotive user interface research. Researchers should now focus on assuring safety in the automation age, transforming vehicles into places for productivity and play, and exploiting new mobility options while preserving user privacy and data security."

Motivation Statement

My motivation for participating in the HCI and Autonomous Vehicles workshop at CHI 2016 is that I firmly believe that the time for our community to turn to exploring HCI for autonomous driving is now, and I want to be part of this community-wide effort. I am excited to see the list of workshop goals, including "exploring novel driver and passenger interaction potentials" and "handover situations between drivers and autonomous cars." In the former I see a vast new space for exciting research, as drivers in a semi-autonomous car will also act as passengers at least some of the time. In the latter I see a necessity, given that, at least for a while, we are likely to have autonomous cars that do hand over driving responsibility to the driver from time to time.

References

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