

An Exploration on Increasing the User Experience and Trust in Driverless cars via User Interface

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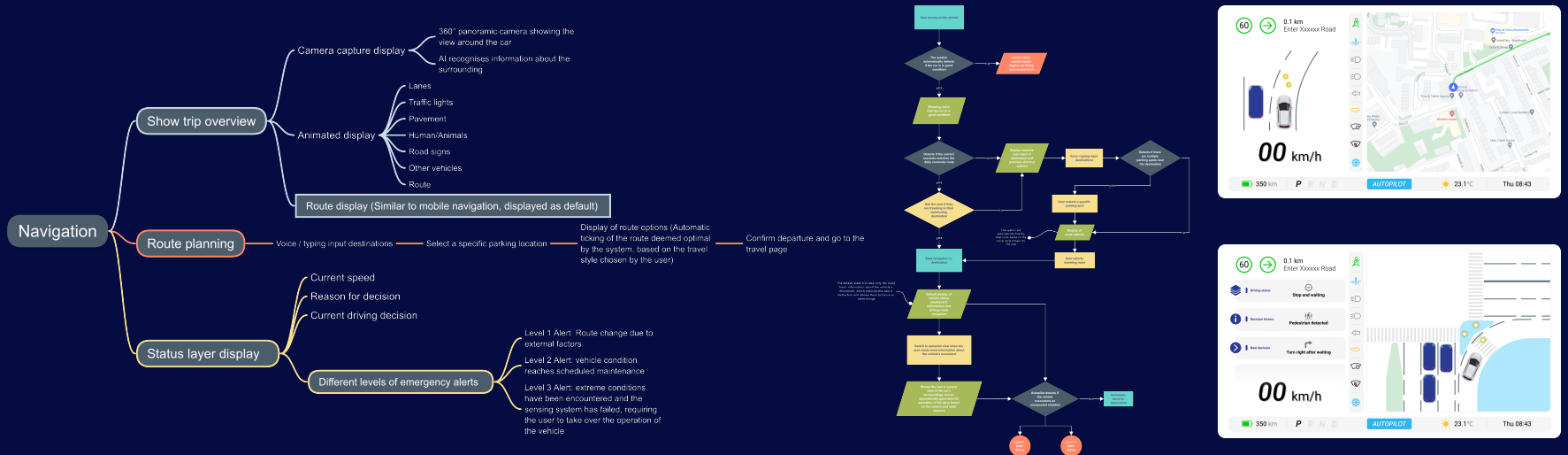
Abstract

In this study, I sent web-based questionnaires to investigate questions related to user trust and acceptance of driverless cars in order to determine user preferences for driverless cars. The validated design solution aims to explore solutions to user experience and user trust issues in the early stages of future fully driverless applications.

Introduction & Background

Assisted driving technology is already a reality, with the ultimate aim of achieving fully driverless vehicles. The new technology will lead to completely new usage scenarios and a different user experience. While previous research has shown that driverless cars have great potential to solve a number of problems, there are also challenges, with many people feeling mistrustful of the safety, responsibility and control of driverless cars, especially at the beginning of the introduction of full automation, and the need to build systems that users trust in fully automated driving to create a positive self-driving user experience. In this project, I want to conduct research in the area of user experience to improve the user experience and trust in driverless cars

Diagram / Design



Research Methodology

Study 1: Survey

Web-based user research questionnaire

- 01 / demographic information
- 02 / user preferences for driverless descriptions and driverless trust descriptions on **5 points Likert Scale**
- 03 / a series free-form questions about usage scenarios

Study 2: Experimental Design

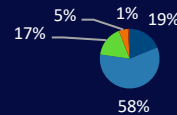
Within-group design

- Introduce the purpose of the study and the procedures
- **2 sets** of experiments with a total of **6 scenes randomly displayed**
- Safety videos
- Measurable experimenter behaviour: Switch to manual drive button **interaction test**

Research Results

The passenger experience of a driverless car is different from that of traditional car.

Strongly agree Agree Neutral Disagree Strongly disagree



Result (from 23 answers)

- **56.5%** choose Type A
- **43.5%** choose Type B
- Interaction records of participants choosing to switch to manual driving were **not** significantly associated with preference

The passenger experience of a driverless car is **different** from that of traditional car.

Have I failed? – Followed by in-depth interview

- Interaction flow is too fast to get familiar with the interface
- Forget the premise of fully automation
- Old usage habits
- Didn't know HD images could be displayed
- Less than ideal experimental conditions
- + **After fully understanding, more participants chose Type B**

Conclusions & Future Work

- Validated design solution designed to explore solutions to user experience and trust issues in the early stages of future fully driverless applications
- Effectively validating the user's perception that the driverless experience is different from the traditional driving experience
- Failure to build a complete and effective system to enhance the driverless user experience and trust, due to failure to achieve ideal experimental conditions
- User experience testing model can be developed specifically for the driverless car environment