There are thoughts on Influence of Rear-Seat Passengers Playing VR Games on Drivers

Name:Song Yang
Department: User Experience Engineering
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Abstract:

This project has investigated the physiological effects of backseat passengers on the driver while playing VR games. With the help of eye tracking, ECG and EEG technologies, we analysed the changes in the driver's physiological data in detail. It was found that in some cases, the activity of the backseat passenger affects the driver's physiological data, and further analyses showed that it can lead to distraction, among other things.

Study Methodology:

Literature Review
Research drivers are susceptible to outside distractions, vr games are now commonplace for in-car use

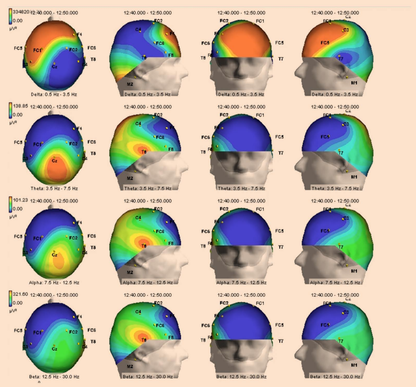
Comparative Experiment
Within group research method, set the test time with map and space as quantitative, rear passenger seat variable

User Interviews
Interviews with drivers and passengers after the experiment to understand the thinking

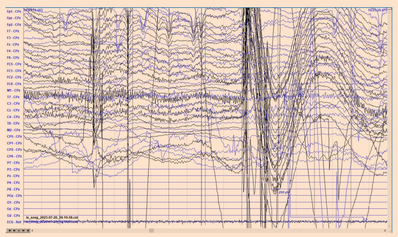
Iterature Review
EEG,ECG,and eye-tracking data were analysed, with fixed values analysed on a case-by-case basis

Testing & Evaluation:

I set up a simple driving task with the same map for the drivers and compared their physiological data in two scenarios without and with a backseat passenger using the VR.

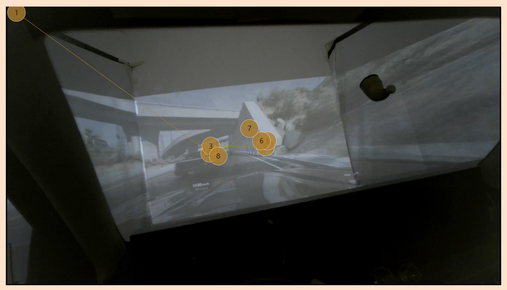


EEG thermogram analysis



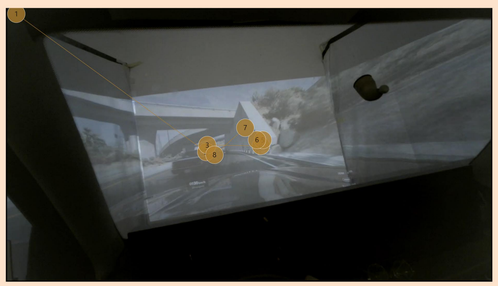
Comparative analysis of ECG

Driver's ECG fluctuations were greater and more complex when there was a passenger playing vr in the back seat under the same road section



Eyetracker eye analysis

Driver's eye trajectory is more complex when there is a passenger playing vr in the back seat under the same road section



Introduction:

The aim of this study was to gain insight into the effects of VR game use by backseat passengers on drivers' physiological responses.

Background: With the widespread use of VR technology in leisure and entertainment, passengers in vehicles are increasingly using these devices. However, there is a paucity of research on whether this use has an effect on drivers. This study aims to fill this gap.

Objectives: The main goal is to understand whether VR games cause driver distraction and to assess their possible effects on driver physiological states.

State of the Art: Recent literature suggests that external distractions while driving may lead to reduced driver attention. However, there is a lack of research on the use of VR by backseat passengers specifically.

Conclusion: The use of VR games by rear-seat passengers does affect some drivers' attention, which may be related to driving safety.

Reflection: The experimental environment was not very realistic, the instruments and techniques were not rigorous, and the body data could have been affected by many external influences that could have affected the results.

Future Work: As a next step, I plan to conduct experiments with more volunteers and in a more restored real-world environment to identify other possible variables and further investigate the effects of VR content types on drivers.

Research Results:

The data showed that when the backseat passengers used the VR, some of the drivers' heart rate and brainwave activity increased and reached a certain value range, and the number of eye tracking points on the eye tracker was higher, which was significantly different from the data when the backseat passengers did not use the VR. This means that at least the passenger made the driver distracted, which can be a safety hazard to some degree.