Factors Considered by VR Developers to Minimise Cybersickness

ABSTRACT

With the growth of Virtual Reality in the past decade, developers are looking to expand the scope of their projects, creating larger and larger virtual worlds. Users, confined to the small space they are in, now require a way to move around these large environments, and a number of techniques have been proposed and tested. Some of these locomotion techniques can cause the user to feel disoriented or nauseous. Certain techniques could be more suitable for the gameplay of the application, causing the developer to choose them over an alternate locomotion method that is less nausea-inducing. We plan to investigate the factors that developers consider when creating their applications, in order to minimise cybersickness. We also plan to investigate what areas developers could improve in, to further minimise the amount of sickness cause by their applications. A number of key factors will be chosen as the areas where developers could focus more on in order to minimise cybersickness in their users.

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WHAT IS YOUR RESEARCH PROBLEM STATEMENT?

The purpose of this research is to investigate the techniques used by developers to reduce cybersickness experienced by virtual reality users. We will be investigating what design considerations developers take to avoid this sickness. We will also be investigating whether developers could be doing more to avoid this sickness.

WHY YOUR RESEARCH IS IMPORTANT?

Many virtual reality spaces require the user to move around in a larger virtual environment than the room they are in, resulting in the need for locomotion techniques to move in this larger space. Some of these movement techniques have been found to make the user feel dizzy or sick, so designing a product with techniques to minimise this is important to allow users to experience the product comfortably.

WHAT IS THE EXISTING RESEARCH LITERATURE IN THE AREA?

Many papers exist on exploring different locomotion methods in virtual reality, comparing and contrasting the different methods. Papers have explored concepts like leaning to increase your velocity in the direction of your lean (Kitson et al., 2017), or moving the whole user with a joystick (Bozgeyikli et al, 2019). Other papers have conducted studies to compare how sick these different techniques made the users, with one claiming that teleporting is superior (Christou & Aristidou, 2017), and another claiming that rapid, continuous movement was superior (Habgood et al., 2018).

WHAT IS YOUR PROPOSED RESEARCH METHODOLOGY?

We plan to investigate what design considerations developers currently have, whether they make any changes to their product in order to reduce cybersickness for their users. We also plan to see if developers could be doing more to reduce how sick their product makes a user, deciding upon some specific techniques that could help to minimise sickness.

WHAT RESOURCES WILL YOU NEED TO CARRY OUT THE RESEARCH?

I will need access to a computer to conduct research and write my paper on, available at home and at Media Design School. I will need access to research databases, in order to find other academic sources, and can use the physical and digital libraries at Media Design School, and Google Scholar.

WILL YOU RESEARCH NEED APPROVAL FROM AN ETHICS COMMITTEE?

No

REFERENCES

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Bozgeyikli, E., Raij, A., Katkoori, S., & Dubey, R. (2019). Locomotion in virtual reality for room scale tracked areas. *International Journal of Human-Computer Studies*, 122, 38–49. doi: 10.1016/j.ijhcs.2018.08.002

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