Bachelorarbeit Rohfassung

Table of Content

[1. Abbreviations 3](#_Toc150100404)

[2. Abstract 3](#_Toc150100405)

[3. Introduction 4](#_Toc150100406)

[4. Methodology 5](#_Toc150100407)

[4.1 Immersion in VR 5](#_Toc150100408)

[4.2 Designing Elements in VR 5](#_Toc150100409)

[4.3 Influence of Design on Immersion 5](#_Toc150100410)

[5. VR Games 6](#_Toc150100411)

[6. Immersion 7](#_Toc150100412)

[6.1 Level of Immersion 7](#_Toc150100413)

[6.1.1 Non-Immersive (Desktop VR) systems 7](#_Toc150100414)

[6.1.2 Semi-Immersive (Fish Tank VR) systems 7](#_Toc150100415)

[6.1.3 Immersive systems 7](#_Toc150100416)

[6.2 Types of Immersion 8](#_Toc150100417)

[6.2.1 Tactical immersion 8](#_Toc150100418)

[6.2.2 Strategic immersion 8](#_Toc150100419)

[6.2.3 Narrative immersion 8](#_Toc150100420)

[6.2.4 Spatial immersion 8](#_Toc150100421)

[6.2.5 Psychological immersion 8](#_Toc150100422)

[6.2.6 Sensory immersion 8](#_Toc150100423)

[7. Design of Virtual Environment 9](#_Toc150100424)

[7.1 Different stages of immersion using different game designs 9](#_Toc150100425)

[7.2 Game design and user experience 9](#_Toc150100426)

[7.3 Interaction and Navigation 9](#_Toc150100427)

[7.4 Visual Aspects 9](#_Toc150100428)

[8. Discussion 10](#_Toc150100429)

[8.1 Interpretation of Results 10](#_Toc150100430)

[9. Conclusion 11](#_Toc150100431)

[9.1 Summary of findings 11](#_Toc150100432)

[9.2 Recommendation for designers and developers according to immersion level 11](#_Toc150100433)

[10. References 12](#_Toc150100434)

1. Abbreviations

VR Virtual Reality

VE Virtual environment

1. Abstract
2. Introduction

Virtual Reality (VR) has made an immense progress in the last few years. Whether it is used for entertainment or for a learning environment, the design of the virtual environment plays a crucial role in the immersion and therefore plays a big part in the experience of the users.

Recently, new advances in virtual reality (VR) have changed the way people watch movies or play games. It has even offered students and younger kids a new studying technique in a learning environment. VR has not only made an entrance in the entertainment or learning environment, but it has also made an appearance in therapy sessions.

Virtual environments (VE) that completely separate the user from their real surroundings increase the degree of immersion immensely and therefore changes the way people experience VR.

It offers a distinct edge by delivering increasingly dynamic and emotionally heightened encounters. [3]

1. Methodology
   1. Immersion in VR
   2. Designing Elements in VR
   3. Influence of Design on Immersion
2. VR Games

When we talk about virtual reality it is important to understand the three most important features. The so called three I’s of virtual reality. The first two I’s are interactive and immersive. These two features go hand in hand. However, most of the people forget about the last feature of virtual reality. Virtual reality is not only accessible for the medium or high-ed user. It can also provide solutions to real problems in engineering, medicine, military and so on. If an application can solve a particular problem depends on the user’s imagination, which is the last “I”.

Therefore, virtual reality is an intertwined concept with the so called three ‘I’s of VR - immersion, interaction and imagination. [2]

1. Immersion

The word immersion can be used for many different departments.

In the world of VR, immersion means being plunged into a virtual

environment. Immersive VR can have a tremendous impact on the users

experience and their motivation.

The definition of immersion according to the Duden is the act of

submerging something or someone into something else

* 1. Level of Immersion

Within a VE setup, a computer produces sensory stimuli that are transmitted to the human senses. The level of immersion and the feeling of presence in VR is determined by the quality and type of the stimuli generated by the computer. Ideally, the high-resolution, high-quality, and consistent over all the displays, information should be presented to all of the user’s senses. In order to maintain the illusion of immersion, the VE should react accordingly to the user’s action. In practice, VE systems only stimulate one or a few of these senses.

VR systems can be categorized based on the degree of immersion they provide to the users. [4]

* + 1. Non-Immersive (Desktop VR) systems

This type of immersion is very easy to implement in many applications, for the reason that it does not need special equipment. It is the simplest type of VR systems.

Nevertheless, it is still commonly used today. Desktop VR is when the user experiences the VE using one or more computer screens. The user can interact with the VE but is not fully immersed in it. The only sensory output is the display. Because of the real time visualization and interaction within a VE that simulates a real world is the reason it became popular in the first place. [4]

* + 1. Semi-Immersive (Fish Tank VR) systems

Semi-immersive system is the improved version of Desktop virtual reality. It provides users with a partially virtual environment where they remain connected to their physical surroundings. With the help of VR glasses, the user can experience a virtual environment without any physical sensation and provide them with the feeling of being there. It generally does not support sensory output. [4]

* + 1. Immersive systems

This type of immersion allows the user to completely dive into VE with the help of head-mounted-devices (HMD). They can be enhanced by audio, haptic and sesory interfaces. [4]

* 1. Types of Immersion
     1. Tactical immersion

This type of immersion is experiences when performing tactical operations that require skills. Users feel “in the zone” while perfecting these skills that result in success. [4]

* + 1. Strategic immersion

Strategic immersion is more intellectual. The VE offers strategic problems that are mentally challenging the players. Users feel immersed when they find a working solution resulting in mastering a demanding problem. [4]

* + 1. Narrative immersion

Uses get so invested in a game story that they feel like they are actually in the game. It is a similar experience when reading a book or watching a movie. [4]

* + 1. Spatial immersion

Spatial immersion occurs when a player feels the VE is perceptually convincing. The player feels that he or she is really “there” and that a simulated world looks and feels “real”. [4]

* + 1. Psychological immersion

This type of immersion happens when the user confuses the VE with the real life. [4]

* + 1. Sensory immersion

The player experiences a unity of time and space as the player fuses with the image medium, which affects impression and awareness. [4]

1. Design of Virtual Environment
   1. Different stages of immersion using different game designs
   2. Game design and user experience
   3. Interaction and Navigation
   4. Visual Aspects
2. Discussion
   1. Interpretation of Results
3. Conclusion
   1. Summary of findings
   2. Recommendation for designers and developers according to immersion level
4. References

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