

Research on the Visual Elements of VR game <The Elder Scrolls V : skyrim VR>

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VR 게임 <엘더 스크롤 V : 스카이 림 VR>의 시각 요소 연구

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Abstract In recent years, various virtual reality games are becoming commercialized. A variety of large 3D online games popular with users has begun to transform into VR games. < the Elder Scrolls V: skyrim VR > as a derivative of large-scale 3D online games < the Elder Scrolls V: skyrim special edition >, Since its launch on the steam game platform in April 2018, because of its original UI design, maximizes the user's immersive experience and firmly maintains the leading position of VR games. Although the visual similarities between < the Elder Scrolls V: Skyrim VR > and < the Elder Scrolls V: Skyrim Special Edition > are high, but the visual elements in the UI are quite different. This paper studies characters, scenes, operating interfaces, colors and fonts five visual UI elements that enhance the immersion in <the Elder Scrolls V: Skyrim VR> game. It provided a unique interface design reference to immersive experience of new VR games in the future.

Key Words : 3D online games, VR games, immersive experience, <the Elder Scrolls V: Skyrim VR>, <the Elder Scrolls V: Skyrim Special Edition>, Visual UI elements

요 약 최근 VR 기술이 점차 발전하면서 다양한 가상현실 게임이 상업화되고 있다. 특히 사용자들에게 인기 있는 다양한 대형 3D 온라인 게임들이 VR 게임으로 변화하기 시작했다. <the Elder Scrolls V: Skyrim VR>은 대형 3D 웹캐스트 <the Elder Scrolls V: Skyrim Special Edition>의 파생 게임으로서, 2018년 4월 Steam 게임 플랫폼에 발표되었고, 독창적인 UI 디자인으로 사용자의 몰입식 체험을 극대화하여 VR 게임 선두 자리를 굳건히 지키고 있다. <the Elder Scrolls V: Skyrim VR>과 <the Elder Scrolls V: Skyrim Special Edition>게임의 시각적 유사성이 높지만, UI에서 나타나는 시각 요소에는 큰 차이를 보이고 있다. 본 논문은 <the Elder Scrolls V: Skyrim VR> 게임에서 몰입감을 높이기 위한 캐릭터, 장면, UI Design, 색상 및 폰트의 시각적 UI 요소에 대해 연구하였으며, 향후 신형 VR 게임의 몰입식 체험을 위한 독창적인 인터페이스 디자인에 대하여 연구하였다.

주제어 : 3D 온라인 게임, VR 게임, 몰입식 체험, <the Elder Scrolls V: Skyrim VR>, <the Elder Scrolls V: Skyrim Special Edition>, 시각적 UI 요소

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1. Introduction

1.1 Research Background

In 1935, the concept of virtual reality was first proposed to American science fiction novelist Stanley Weinbaum. It also symbolizes the birth to the concept of virtual reality based on glasses and involving all-round immersive experience such as vision, touch and smell. With the continuous improvement and development of virtual reality technology, it has developed rapidly in the field of entertainment games, and virtual reality technology has gradually been contacted by the public. Starting from 2016, VR (virtual reality) markets presents a trend of further development.[1] VR glasses has also entered the consumer electronics market. Then all kinds of VR glasses came into being, major brands began to pursue the progress of immersive virtual reality technology details. At the September 2019 Oculus Connect 6 conferences, Facebook said: the total transaction volume of Oculus app store exceeded \$100 million, which gave the industry great confidence.[2] It is expected that 2020 will be the year of VR outbreak.

Today, virtual reality has been widely contacted by the public, but there are still many shortcomings in technology. As a result, VR technology is currently only applicable to simple interaction. In such a large environment, there are great limitations on content development. Therefore, how to improve the immersion in VR technology has become the most popular topic. In order to avoid the unnatural interaction mode and enhance the user's game experience, VR games need to consider the interface design, interaction mode, sound effect and other aspects comprehensively. Visual art elements of VR game UI design mainly to convey various information on people through vision.[3] < the Elder Scrolls V: skyrim VR > as a leader in VR games, it integrates rich visual art elements into the UI design,

greatly improving the shortcomings of VR game, and winning unanimous praise from users in the sense of immersion.

1.2 Scope and method of research

The immersive VR game mainly transmits the immersion information on the users through the three aspects of vision, hearing and touch. This paper will study from the visual aspect, and explain the types of VR games on steam platform, and take the VR game < skyrim VR > published in 2018 as the main narrative object and select the most popular UI interface in the game, such as role, scene, operation interface, color and font design to analysis. Through the study of the above five visual UI elements, in order to improve the user's visual immersion, the characteristics of visual elements in the UI design of VR game < the Elder Scrolls V: skyrim VR > are explained.

For the convenience of reading, The following will use < skyrim VR > and < skyrim special edition > instead of < the Elder Scrolls V: skyrim VR > and < the Elder Scrolls V: skyrim special edition >.

2. Theoretical research

2.1 Game UI designs

UI designs to refer to the overall design of human-computer interaction, operation logic and beautiful interface of software.[4] There are two types of UI Design: entity UI and virtual UI.[5] Game UI is virtual UI. The game UI are designed specifically for the game, it includes three parts: visual design, interactive design and user experience.

2.2 < skyrim VR >

2.2.1 Theoretical background of < skyrim VR >
< skyrim VR > is a 3dvr game produced and

released by Bethesda software, LLC. It's the same VR game as the 3D game < skyrim special edition >. Since it was released on the steam game platform on April 3, 2018, it has been highly praised by users for its immersive game screen and rich game content, and still ranks of the top 10 in VR game ranking.

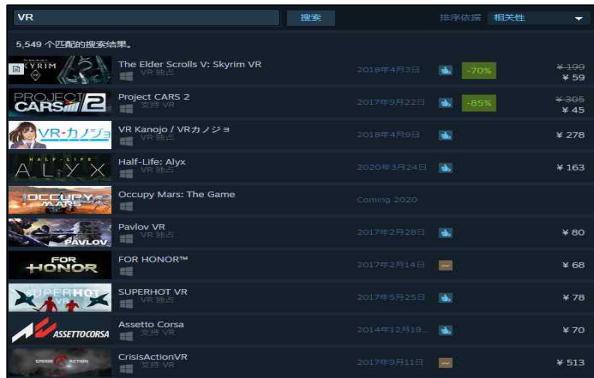


Fig. 1. Steam platform VR game Leaderboard

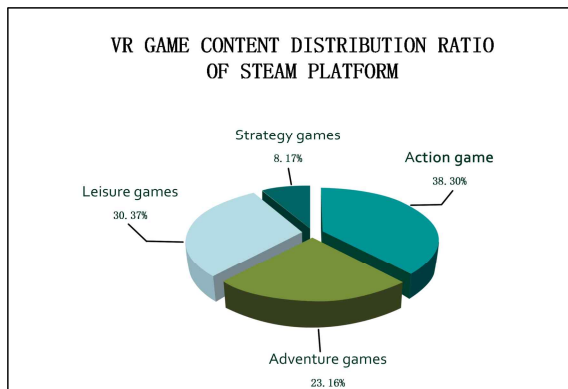


Fig. 2. VR game content distribution ratio of steam platform[8]

If you want to share the type of content, the first problem to be solved is to determine the standard.[6] It can be seen from Fig. 2, on the steam game platform, adventure games and action games account for more than half of the total proportion. < skyrim VR > is a VR game integrating adventure, action and role-playing. It has been ranked in the forefront of many adventure action VR games, which shows its popularity. It is basically consistent with the <

skyrim special edition > in the plot. The principal line are about the struggle for the Empire and the rebels, and the duel between the hero and the dragon. The depth lies in that you will never know the history and secret behind this magical continents if you don't explore deeply.[7]

Through comparison, it is found that < skyrim VR > is basically the same as the original 3D game < The Elder Scrolls V >. But in the actual game experience, the screen is still slightly rough, and in some scenes, the quality of the screen will be greatly reduced. This is also a common problem of current VR games, which can be improved later through mod.

Table 1. Comparison between the original version and VR version

	< skyrim special edition>	< skyrim VR >
storyline	The struggle for the Empire and the rebels, The decisive battle between hero and Dragon	Including the original game body and all DLC content. Without the plot of edladendra, three eras, dynastic change, etc
Game screen	In the Skyrim Special Edition improved image quality	The picture quality is about equal to that of the original, but the details are rich
Map	With huge maps and rich information	
operation	Use keyboard or handle	Control with VR handle
Game play	Free choice of weapons. Can hunt, cook, forge and enchant	




3. < skyrim VR > analysis of visual elements of UI

3.1 < skyrim VR > Character visuals

Game characters play a key role in all kinds of games, which can directly to determine the success or failure of a game. The characters of VR games do not only refer to a certain persona, but also a series of game characters that appear with the development of the game plot. These game characters should have a unified style in design, so as to ensure the unity of the whole game in style.[9] The style and shape design of

the characters determine the type trend of the whole game.

Table 2. Characteristics of character elements

Character image	characteristic
	The characters adopt elements of primitive tribal style in modeling and clothing, in line with the characteristics of ancient empire figures, and the characters are ethnically diverse
	
	


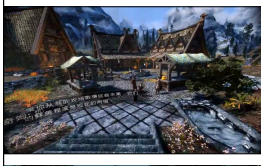

3.2 < skyrim VR > Scene visual effect

Game scene refers to any place that the characters running in the game can reach. It can be said that if there is no game character, the game itself is formed by the combination of various scenes.[10] In the VR game < skyrim VR >, the scene is constantly interspersed with the role and plot changes. The main role of the game scene of < skyrim VR > are to: 1. Explain the background of the times. 2. Create an emotional atmosphere. 3. Set off the character. 4. Promote the development of the plot. 5. Show the game style. Through the above aspects, rich scene content has been created.

As can be seen from Table 3, the main visual style of the scene is still around the original tribe. On this basis, different characteristic elements are interspersed according to the changes of the main line content, which not only makes the scene not separated from the main style, but also adds fresh activity, greatly improves the visual fatigue brought by VR games, and adds a touch of comfort to the immersion

feeling.

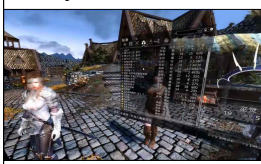
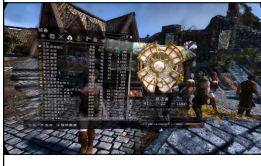

Table 3. Features of scene elements

scene	characteristic
	The scene changes from the Storyline. There are primitive tribes, beautiful towns, mysterious primeval forests and so on, with various scenes.
	
	

3.3 < skyrim VR > Visual effects of operation interface

In the original game, the operation interface mainly includes these aspects: smart keyboard, as long as you press any letter, number or no special purpose symbol for the keyboard, a smart keyboard will pop up. Users can enter information on the smart keyboard to search for the desired category, etc. It's the same in VR game, but in VR game, VR handle is used to replace keyboard for in game operation.

Table 4. Features of operation interface

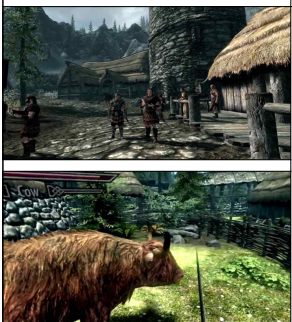
Operation interface	characteristic
	The distance between the operation interface and the eyes is shortened to increase the perspective effect. And through the control of the operation interface, different game elements will be produced.
	
	

The sense that is currently leading the virtual world is the vision of the five senses.[11] In < skyrim VR >, the operation interface produces a visual effect suspended in front of the eyes, Different from the original < skyrim special edition > as the operation interface of the background board. The operation interface of < skyrim VR > will produce perspective effects following the change of perspective, and visually shorten the distance from the eye. Visual art elements integrated into the operation interface greatly enhance the sense of immersion.

3.4 < skyrim VR >Color and font visual effect

Color designs is color matching.[12] As a visual language, color has the functions of emotion, symbol, association and idea.[13] The color needs to change according to the change of the game plot to convey different emotions. < skyrim VR > in color selection, with the game scenario, the ancient elements of the original tribe are reflected on color performance. The main color are yellow and green. The game color will change from the game plot and the mood of the characters.


Table 5. Features of color

color	characteristic
	<p>Mainly in yellow and green, most of them adopt dark colors in line with the battle background of primitive tribes and ancient empires.</p>

Text is mainly used in the UI design in the game. The UI design in the game is mainly to guide the players, help them control the process of the game, reduce the memory burden of the players, and maintain the consistency of the interface.[14] The font effect of < skyrim VR >

mainly plays the role of explanation and publicity, and in order to adapt to the visual effect of VR games, it has a certain perspective effect. The text is placed in an eye-catching position, which will be used as a prompt during the dialogue, and it also has the function of prompt when meeting the level, so that players can understand the game and understand the rules of the game in a short time.

Table 6. Features of typeface

typeface	characteristic
	<p>Whether it's a dialogue with a character or a level hint, it will come up. Simple and easy to understand</p>

4. Conclusion

The design of every visual element in UI designs has its particular significance and purpose.[15] This paper aims to enhance visual immersion, and analyzed the five most important UI visual arts elements in VR games <The Elder Scrolls V: Skyrim VR >. The core features are as follows: 1. When the game characters are integrated into the design elements, they should conform to the game background settings. The characters modeling to design are the most critical part, we should pay attention to the unity of style. 2. Game scene is an important way to convey the theme of the game. Match the game background and it will change according to the plot. 3. The design of operation interface shall be simple and easy to operate and into the perspective of visual elements. Too complicated operation interface is

easy to cause visual fatigue and vertigo. 4. In VR games, color elements are important means of UI design. When choosing colors, try to choose the same color system as possible. Too many colors will cause visual confusion and reduce VR game experience 5. Fonts in VR games, mainly play the role of explanation and publicity. When adding font elements, the position should be eye-catching and the content should be concise and easy to understand. It is convenient for new users to understand the game methods and rules in a short time. Through the research of this paper, in the development of VR games, mastering excellent UI design elements is also the top priority. Based on this, we can continuously improve the visual immersion of VR games, and continue to open up and develop.

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