Research on UI Design of FPS (First-Person Shooting Game) Game

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Abstract: This paper briefly introduces the principles of human-computer interaction design and the development of FPS games. Through the analysis of the current mainstream FPS game interface, summarize the current players are familiar with the interface and use of graphics. According to the human-computer interaction design principle and human cognitive way to analyze the shortcomings. Simulated real feelings to increase the visual expression of game information, at the same time from the visual Angle of analysis how to interface in some text information pattern design or to simplify the original graphical information, and be able to let the player more rapid access to key information, use independent prompts to help players into the game quickly. UI design is more realistic and changes the way information is fed back in the main interface. It is proposed that under virtual reality environment, the classification shortcut key setting can reduce the run-in time of FPS game loyal players and make the information feedback in the game more convenient. The combination of simplified interface and keyboard shortcuts to display detailed information increases player immersion while also providing professional players with what they want.

1. Analyze the UI Interface of Current Mainstream FPS Games

1.1 Principles of Human-Computer Interface Design

Human-computer interface design should first analyze user types. User types can be classified from different perspectives, such as gender, age, occupation, preference and so on. Once the types are identified, they are expected to respond to different interfaces based on their characteristics. Interface design mainly meet the following points: 1 visual range of information as much as possible to simplify, reduce the burden of user memory. 2 with help and prompt functions. 3 to respond to the user's operational commands, to help the user deal with the problem. 4. The system should be designed with the ability to recover the fault site, and prompt should be provided for the internal treatment of the system, so as to give the initiative to the user. A good user interface makes it easy for the player to use, to immerse himself in the game world, and not to feel the existence of a human-computer interface.

1.2 Analyze the Development and Changes of FPS Game History and Interface

From VR swat to 1993, the world's first FPS game, doom, was born. FPS game interface has a basic information structure, first-person perspective, but the screen shows hands and weapons, basic information of the character itself, weapon information, target information, detailed map information and so on. Over the next few years, hammer, unreal arena, half-life, halo and other FPS hits have continued to emerge. Today, online FPS games: tencent's "crossfire", "jedi" and blizzard's "overwatch" account for half of all FPS games. "Jedi" as a competitive FPS, with easy to use, competitive strong, a short game time and other characteristics.

Although competitive FPS is the mainstream of this type of games at present, another kind of plot FPS or maybe even a trend of FPS development in virtual reality environment. Based on the plot, this type of FPS allows players to carry out game tasks in the process similar to the development of films, and allows players to experience shooting games with a more immersive sense of film plot, which is

more compatible with the advantages of head-mounted virtual reality devices. Therefore, in the game interface design, competitive FPS and plot FPS have completely different information layout and design.

1.3 Analyze the Design and Operation of Different FPS Game Interfaces

In a bold attempt by IDsoft, the hand holding the weapon appears in the game screen for the first time (figure 1.1), instead of just facing various enemies from the perspective of the first person. This novel design, which can give players more psychological hints and make participants get a stronger sense of presence and reality, has gradually become the mainstream expression mode of FPS. FPS game design as a movements performance information of the game is not a lot of major players information, target information, information weapon props, map of environmental information, etc., at the beginning of FPS will be divided in an area of the screen, but in order to let players into the game better, more game started to cancel the "zoning" interface design, information display also started to semitransparent, aim is not affect the graphics.

Figure1.1 Basic form of FPS game interface

Figure 1.2 Use interface of props in the game

2. FPS Game Interface Information Design Differences

2.1 Interface Design is Conducive to the Completion of User Goals

Since the operation of the game is mostly dependent on gamepad, mouse and keyboard, the function Settings in the game can only be arranged within the scope of the window. Most FPS game in order to provide information about the "direction" sex is increasing the function of "compass" - that is, small map display, because now the FPS scenes make more and more complex, more small map shows the game and can't provide effective information to the players, to map information in some higher requirements of the game will also separate map information interface are presented. In order to allow the player to better identify the target, for some initial difficulty generally have the target color distinction or additional identification. In the selection of some props, will also add some can pick up or select tips. These interface information is added to allow the player to complete the task more easily.

2.2 Interface Adaptation Difficulty and Efficiency

The learnability of the game interface is mainly to make the interface intuitive, the simpler the operation, the more intuitive the functions and the clearer the state. Only in this way can new game players adapt to the game content in a very short time. For casual or first-time gamers, the ease of learning the interface is especially important, as it is an important part of a game's appeal to new players. If too many functions are covered on the game screen, it violates the principle of minimum information in interface design and increases the learning time of game users. Too complex information recognition will make people feel difficult and reject the game.

The effectiveness of the game interface refers to the necessity of the interface functions during the operation of the game players, and the transmission of screen information is of high efficiency. Here is the main FPS game for some loyal players. With the rise of e-sports industry, the effectiveness of game interface is more important to the design of competitive FPS. Professional players generally have a certain degree of proficiency in operation, and they have high requirements on the speed and

accuracy of information feedback, so the setting of some shortcut keys and the digital visual presentation of information are the main consideration in interface design.

3. How to Optimize the UI of FPS Reasonably

3.1 From the Perspective of Visual Analysis, How Can the Interface Be Simplified in Terms of Colors and Images

From the learnability principle of game interface design, we can find that for some beginners, we should remove unnecessary information as much as possible in the initial interface. Use visual ICONS and images as much as possible, including the use of colors such as green for good health. Red indicates danger warning, etc. Therefore, the design of ICONS should be consistent with or similar to that of games of the same type as far as possible. For example, the display of gun information has been represented by the outline image of guns, and the amount of blood has been replaced by HP or cross symbol. For competitive category or professional players they need is a quick read more information, then the pattern is a good way to simplify, we can refer to other types of games to optimize, for example, is the most important game for HP show action type, the map shows the most important thing is an RPG game, we can according to their ways to optimize or integrate some information. For example: Figure 3.1.

Figure 3.1 Graphical design of interface information

Combine multiple information into one graph, for example, change the display mode of health value number to red to green bar graph and combine the graph that can represent its meaning, change 2 pieces of information into one graph to display to save interface occupation and reading time. Map can also use color to distinguish the relationship between friends and enemies, shape symbol to replace the function and role, and health shows that from the rotation range (figure a) vision, vision is the best range of text color eye movement around 40 degrees, according to the human eye, according to a display of 60 cm, when the display more than 21 inch visual cannot estimate of the person on either side of the screen as shown in figure 3.2. Although the visual range of the current virtual reality device is up to 360 degrees, if the range of interface information is larger than the view Angle, the user needs to turn the head to read the interface information, which will have a certain impact on the time of information acquisition.

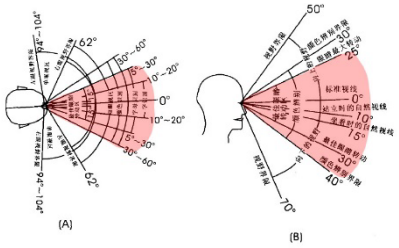

Figure 3.2 Range of human vision

3.2 How to Ensure that the Simplified Interface Does Not Affect the Transmission of Information

As is Figure 3.3 is a common way to divide the game interface. The basic principle is to put information around the screen without affecting the line of sight of the main screen. After the simplification of the picture, after the original number or text interface disappeared, the information affecting the main picture became less and less, in order to expand the area of the visual field. The player's vision can be completely focused on the game screen, which is conducive to the user's "immersion". But as a game state of the characters and function of information feedback is necessary, in the game "call of duty" gives us a very good hint (figure 3.4), we can simulate the state to represent the state of the role in real life, such as blurred vision, the emergency of the heart beating, red blood, action is slow and so on to prompt the players can't continue to fight. Similarly, by incorporating the "handheld weapon" effect into the game screen, the item information is already displayed, so there is no need to repeat the message again in the interface. The use of weapons can also simulate the state in real life, and the state itself is more direct as a kind of information feedback. At the same time, it is easier to immerse in the game because it is similar to the state in real life. Such a "simulated" message prompt can even reduce the graphical design of the information in the interface for players who are just playing the game.

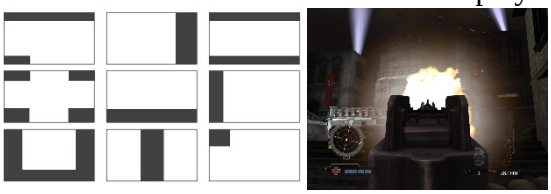

Figure 3.3 Interface partition

Figure 3.4 Game： Call of duty Interface

3.3 How to Reduce the Difficulty of Operation Through Prompt Assistance in UI Design in Virtual Reality Environment

For some new players, more is needed to help or hints for tasks on the operation, some hints in the game process of information on separate rows, can display the new real-time window interface can reduce the burden of memory of new players, for example: when players encounter obstacles can prompt the needed key operation. Or when acquiring new weapon items, you can also provide instructions at the time of acquisition. This is often used in some RPGS, or in the interface with a shortcut key to get action, use instructions to prompt the player. This helps new or experiential players become more familiar with the game when key items are used. For players with head-mounted virtual reality devices, immersion is particularly important. Using shortcut keys to hide and display some unconventional information is conducive to increasing the area of the screen content from the main perspective.

3.4 Necessity to Operate Shortcut Key Settings

For some faithful FPS gamers and professional players, they don't need to spend time on the interface of the familiar, and more in need of technical operations, because now the FPS game types are very various, operation of the set is not the same, so if a game if I can go to adapt to the habit of players, rather than for players to take the time to adapt to the operation of the game, so will make the player's kindness. This is a free keyboard shortcut. This is not only the operation method of zooming-in all FPS games, but also due to different personal habits of players, such as the mouse's left and right hand Settings, the setting of each action key of the character, has become the standard configuration of a competitive FPS. At the same time, some Settings of non-important information can also be completely hidden and displayed with shortcut keys, after all, these information is not always needed to read, such as: task, teammate status, detailed map information, network status and so on. Especially detailed maps and information about teammates. In the operation of FPS games, the two hands usually control the keyboard and mouse respectively, except the mouse a shot key and WASD(usually) to operate the movement still have at least 20

keys left to allocate the remaining action commands and shortcut key operations. These are enough to display the player's desired information.

4. **Conclusion**

With the increasing popularity of virtual reality home hardware devices, it is the most important design principle for the general users who experience FPS games to quickly integrate into the game from the first-person perspective and immerse themselves in the game picture. Minimize unnecessary information in the image, and use patterns or simulations of real-life reactions to give feedback. For professional players, they can accept more complex operations, and the interface in the operation must directly feedback the desired information. Therefore, free and convenient shortcut key setting is an essential function, and it is also possible to shorten the feedback time of information by making use of the graphical information display. It has become a trend to leave more room for the screen and to simplify the interface by controlling game information feedback and content with the simulation or shortcut keys of the "reality" state.

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