

Analysis of Human-Computer Interaction in Computer Game UI Design

Xueling Yang

Guangzhou Huali Science and Technology Vocational College, China

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Abstract: Computer plays an important role in people's daily life. Computer games are the product of the development and progress of computer technology. After the popularization of computer, the computer game industry has become an important industry in the computer industry, and also an important tax source of the country. Computer game UI design is an important part of computer design. There is a certain similarity between the interactive design law of computer game interface and the general law of interface design, as well as the particularity law in the field of game design. The computer game interface is an important factor in the user's game sense and substitution experience. On the basis of discovering the reasonable needs of users and satisfying the needs of users, reasonable design of interactive elements can help improve the user's gaming experience. This paper mainly analyzes the interpersonal interaction requirements of computer game UI design, the design concept of human-computer interaction and the implementation measures of human-computer interaction.

1. Introduction

Computer games have gone through nearly 50 years of development. At present, computer games include many types, such as 3D action games, formative games and strategic games. The development and progress of computer technology has revolutionized the design concept and interest of computer games. Since the 1990s, with the continuous popularization of computers, the computer network game industry has entered a period of rapid development. The development of computer game industry has indirectly led to the rise and development of Internet cafe, animation industry and network live broadcasting industry. According to the characteristics of computer games, the game interface is an important interactive system in the computer, which plays a more important role in the two-way communication between the player and the game program. The emergence of the concept of human-computer interaction has made game makers pay attention to the humanization of the game interface. Exploring the human-computer interaction of computer game UI design can provide some support for the development of the game industry.

2. Human-Computer Interaction Requirements for Computer Game UI Design

2.1 Reduce the Impact of Entering Computer Games

The entry mode and speed of the game are more concerned by the players. If gamers spend a lot of time in the login phase of the game interface, they may show disgust with the content of the game. The loss of players' enthusiasm for the game will also reduce their attention to the game. In order to take into account the game experience of gamers, game designers need to reduce the impact of computer games in UI design, so that players can use less time to enter the normal use interface of the game, and let the players feel the fun of the game.

2.2 Insert Help Content in Game Strategy

Game rules and play methods are not negligible contents for gamers when they are exposed to computer games. Game rules are the basic elements for players to participate in the game and enjoy the game. Some players are eager to know how to use the game in order to enjoy it. In order to give gamers a better understanding of the rules of the game, game designers can insert help content into the game strategy during the game design process, so that players can understand the rules of the

game with images and simple words.

3. Design Concept of Computer Game UI Design

3.1 The Idea of Unity

In general, large-scale games often contain a lot of step-by-step briefings and prompting information. Gamers often need to capture this kind of information quickly in the course of the game. In order to enhance the user's game experience, game designers can follow the concept of unity in game UI design. The principle of consistency and unity in computer games can be regarded as a reflection of the concept of unity in game design [1]. Unified game layout structure allows players to combine the game plot to produce thinking patterns, and then in the process of participating in the game, better determine the corresponding prompts, key points. After the unification concept is applied to the design of computer games, the content of games can be appropriately saved in text interpretation. According to the actual situation of computer game design, the concept of unity is not the monotony of the pattern in the game. Game designers can design a variety of different game scenarios based on the construction of a consistent overall layout. The unified and consistent game layout can guarantee the freshness of the game to the player, and also let the game player indirectly understand the game thinking mode contained in the game. The overall consistency of the game shortcut mode and the game prompts also helps the game to expand, so that players can understand the new gameplay.

3.2 The Artistic Design Concept of Game Control System

With the continuous development of game design technology, the concept of artistic design has begun to become the focus of game designers. As far as the development of online games is concerned, the computer games represented by "The Legend of Xianjian Qixia" are DOS system games. Due to the objective restrictions of processors and display screens, most game players pay attention to the plot clearance. In recent years, with the continuous development of image integration system, the demand of game players for game pictures has also increased. In terms of game interface artistic design, the concept of artistic design can bring players a more ideal game experience. Taking some PC games with Chinese style as examples, the story background, architectural style and daily style of the game need to show the traditional Chinese style. Players can also get to know the characteristics and themes of the game after touching the game interface. For example, the scene designed in "Blood War on the Beach" is Shanghai during the War of Resistance. The background design used in the game related to the content of anti-war old photos allows gamers to understand the theme of the game. The "Street Basketball" interface contains a lot of graffiti style elements. There is a certain connection between the graffiti element and the basketball culture. In countries and regions where basketball culture is developing rapidly, graffiti culture is more popular among local people. The graffiti content in the game also has a variety of characteristics, such as star avatars, landscape images and classic movements in street basketball will also be displayed in the form of graffiti. "Street Basketball" is a kind of court with Chinese cultural characteristics. The colour of the stadium is mainly red and yellow. The stadium contains the dragon pattern with the background of the Great Wall of China [2]. In the design of URPG games, there is no need to switch the battle scenes in the game. Skill buttons, option buttons and the status of the game characters are also factors that the game designers need to pay attention to.

3.3 Innovativeness

Computer games are the product of the development and progress of science and technology. Under the influence of computer software technology, hardware technology and other technologies, video games can integrate the characteristics of other forms of art, and become an acceptable entertainment lifestyle in the process of getting rid of their own entertainment functions. The popularity of computers makes electronic products occupy an important position in the mainstream consumption field. With the change of people's consumption concept, video game consumption has

become an important consumption expenditure. The goal, competition and interaction of computer games are the main factors that attract users' attention. As far as the development status of computer games is concerned, computer games show a variety of characteristics, but there are some similarities in the game content of many games. For example, Tencent has a certain similarity between FireWire and CS. After the interest of webcasting, the "Dream Factory" channel [3], which is mainly based on webcasting, also appeared in the game QQ Hyun Dance. The mutual learning of the game design field is to combine the shortcomings of other games to improve the game content of the game. However, in the case of lack of innovation in the game content, the player touches the game with different names but similar game content. It may be boring to computer games. Therefore, innovation also plays a more important role in computer game design.

4. Human-Computer Interaction Measures for UI Design of Computer Games

4.1 Principles of Artistic Design for Reasonable Application of Game Interface

The principles of contrast, coordination, interest and rhythm also play an important role in game UI design. The hierarchy of game theme and background and the order of players' visits can also be regarded as the main factors influencing players' game experience. The game interface contains a lot of dynamic elements. The reasonable application of the principle of game interface artistic design makes the combination of dynamic part and static part of the game become the focus of game designers. For computer games, dynamic pictures and the development process of things are the main manifestations of the dynamic part [4]. The buttons and text commentary contained in the game interface can be considered as a static part of the game. In order to ensure the cooperation between the dynamic part and the static part, the game designer can pay attention to the dynamic element and the static element configuration, and clear the entry point and the out point of the dynamic element. The out point and the in point of the dynamic element need to have the characteristics of echoing and coordinating with each other.

In terms of game UI design, different game types require different attention from the game designer. Turn-based games and real-time games are two of the more common computer games. The full-screen interface has a relatively limited impact on turn-based games. Under the full screen interface, the interference of information on the screen may affect the game experience of real-time games. The game design of real-time games needs to follow the principle of transparency. To reduce the impact of information, real-time games need not be set to a full-screen interface.

In addition, the game type, player gender, interface color matching and music design are also not negligible in the design of computer game interface AI. In terms of interface color design, computer games at this stage are often matched with warm colors such as orange and red. Some of the target groups for female players will use more colors such as pink and light blue. In terms of music design, the background music applied to the game UI design is mostly light and clear music. The application of background music can help alleviate all kinds of pressure during the game. There are certain differences in the background music design of different types of games. For example, the dance games represented by QQ dazzling dance include various classical pop songs, and the background music of classical games such as "The Legend of Xianjian Qixia" is mostly classical music.

In terms of gender, the AI design of computer games with female groups as potential user groups makes use of female favorite forms of expression [5]. Nail design, hairstyle design and other feminine elements are also used in some games. Game sites such as 4399 games and 7K7K games contain a large number of games based on nail art, hair design and costumes.

4.2 Opening up New Input and Output Modes

Computer game hardware interface design is also an important factor in human-computer interaction. Under normal circumstances, the overall design of the computer game hardware interface allows the game player to understand the functional operation of each part, thereby increasing the interaction between the user and the product. At the user level, interaction design

allows game designers to understand the target users and their own expectations. In order to enhance the interactivity of the computer game interface, computer game designers need to open up new input methods and output methods [6]. As far as the development of computer game technology is concerned, the form of human-computer interaction based on multimedia user interface is a more commonly used form of interaction. In the field of game UI design, game designers will apply new media such as sound and animation to UI design. However, in the process of using the game, gamers still need to use conventional input devices (such as keyboard, mouse, etc.) for input. Therefore, at present, the input mode of computer games is still dominated by single channel input mode. In recent years, multi-channel user interface design technology has begun to attract attention in the field of game design. After the application of multi-channel user interface in the design of computer game UI, designers can start with new interactive channels, interactive devices and interactive technology, so that game users can carry out human-computer dialogue in a natural and collaborative way. For example, in some computer games relying on game handles, game designers can place acceleration sensors or carpet pressure sensors in the game handles to bring game users a different game experience [7]. In the modern society with the continuous development of science and technology, game equipment which gives visual tracking technology and voice control technology can also be used in computer games. The application of the above technology can play a role in liberating users to a certain extent. The application of sensing technology and virtual technology in the design of computer game UI can also make gamers better shuttle between reality and virtual. It can be said that motion sensing technology plays a more important role in new input methods and output methods. After the application of the motion sensing technology, the substance-related motion sensing device can effectively recognize the change of the player's motion, and can also implement various interactive games through the action of the player.

4.3 Highlighting the People-Oriented Concept

The human-centered design concept can also enhance the human-computer interaction of computer UI design. There is a close relationship between the people-oriented design concept and the use function of products. With the continuous development of economy and society, the spiritual factors of consumers have begun to receive social attention. In the field of product design, people-oriented design concept not only requires consumers to use products safely and comfortably, but also requires consumers to get spiritual pleasure in the process of using products, and let consumers get comfortable, comfortable and humanized experience in the process of consuming products. In order to apply the people-oriented design concept to the UI interface design of computer games. Designers can pay attention to the application of semantics in the process of game UI design, so as to enhance user's human-computer interaction experience. From the point of view of game users, the application of semantics can enable users to understand the game efficiently and avoid the disoperation caused by ambiguity [8]. The self-expression and communication of game products is the main goal of semantics applied to game UI design. The game designer can adopt some simple forms in the design of game interface, so that game users can better use the product. As in the game parameter adjustment button design process, the game designer can set this button in the form of a wrench. The wrench-shaped logo allows the player to understand the function of the button. In the game story interface design process, the game designer can set the question mark or manual style icon at the relevant NPC to facilitate the player to understand the game content. In the context of increasing consumer awareness of energy conservation, game products can also focus on energy-saving and environmentally friendly design.

4.4 Improving the Intelligence Level of Computer Game

Advances in microelectronics technology can allow electronic materials to integrate more functions within a limited volume and weight, and also reduce the internal structure's constraints on external forms [9]. In the field of computer game design, multi-functional integrated and intelligent computer game products can show various advantages such as convenient operation, complete functions and simple and quick. Therefore, the improvement of computer intelligence level also

contributes to the improvement of human-computer interaction of UI interface design. The application of virtual reality technology in computer game AI design is an important measure to improve the level of computer game intelligence. Virtual reality technology can enhance the realism of computer games. In the virtual world construction process of the game, the game designer can start from the three-dimensional model, three-dimensional sound, three-dimensional characters and other resources to carry out AI design. During the implementation of AI design, the game designer needs to construct a rationalized model organization structure. And to perfect each element in the game world based on virtual reality technology. The application of virtual reality technology in computer games can make gamers feel real-time, realistic and highly decomposed 3D scenes. In view of the impact of games on minors, game designers can use intelligent sensing system to control players' game behavior. Under the influence of the national situation and policy, the computer game anti-addiction system has begun to attract the attention of researchers. After the application of intelligent sensing system, the related system can control the game time of minors. At this stage, some mobile games have been installed in the juvenile compulsory offline system. Under the influence of the current situation, the juvenile compulsory offline system will also be improved in computer games.

5. Conclusion

The role of human-computer interaction in the UI interface design of computer games is to improve the quality and quality of the game itself, and also to give players the ultimate game experience. There is a certain similarity between the interactive design law of computer game interface and the general law of interface design, as well as the particularity law in the field of game design. Computer game interface is an important factor affecting user's sensory and generative experience. On the basis of discovering the reasonable needs of users and satisfying the needs of users, reasonable design of interactive elements can help improve the user's gaming experience. Innovative design concept, that is, artistic design concept is the guarantee factor of the market competitiveness of computer games. Influenced by factors such as situation and policy, the application of intelligent technology in game AI design can make computer games better accepted by the public.

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