

Research on New Media Design Based on Virtual Reality and Human-Computer Interaction Technology

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Abstract: In recent years, with the development of the Internet and computer technology, new media has been growing, and the communication environment and form of media have changed significantly, which has had a profound impact on the media industry. In the new media environment, the application of various high-tech has subverted the traditional media, changed the entire business environment, and further improved the user experience. Virtual reality technology and human-computer interaction technology are new technologies derived from computer technology. They are also two important new technologies in the new media environment and play an important role in new media design. In the new media design, virtual reality technology and human-computer interaction technology can be used to build a virtual environment that is close to the real state. Users can use relevant auxiliary equipment to interact with people and things in the virtual environment, so that users can have a real experience. This way can greatly stimulate users' interest and attract users to participate actively. In this paper, virtual reality technology and human-computer interaction technology are briefly described; This paper discusses the basic elements and principles of new media design based on virtual reality and human-computer interaction technology. The basic elements include stereoscopy, timeliness and sense of scene. The basic principles include interaction, experience and virtuality; This paper focuses on the research of new media design based on virtual reality and human-computer interaction technology from two aspects of design ideas and aesthetic characteristics.

1. Overview of virtual reality and human-computer interaction technology

1.1 Virtual Reality Technology

Virtual reality technology (English name: Virtual Reality, abbreviated as VR), also known as spirit technology, is a new practical technology developed in the 20th century. Virtual reality technology includes computer, electronic information and simulation technology, and its basic realization mode is computer simulation of virtual environment to give people a sense of environmental immersion. The “reality” in virtual reality generally refers to any thing or environment existing in the world in the physical or functional sense. It can be realized in practice, or it can be difficult or impossible to achieve in practice. And “virtual” means computer generated. Therefore, virtual reality refers to a special environment generated by computers. People can “project” themselves into this environment by using various special devices, and operate and control the environment to achieve a special purpose, that is, people are the master of this environment. Virtual reality is a combination of many technologies, including real-time 3D computer graphics technology, wide angle (wide field of view) stereo display technology, stereo, tactile/haptic feedback, etc. At present, virtual reality technology has been widely used in many fields, such as distance education, assisted medical care, games and intelligent manufacturing. With the development of technology in the future, I believe that virtual reality technology can have a broader development prospect.

1.2 Human Computer Interaction Technology

Human-Computer Interaction (HCI) refers to the process of information exchange between people and computers to complete certain tasks in a certain way by using a certain dialogue language. In simple terms, human-computer interaction is a study of the interactive relationship between the system and the user. The relationship between man and computer problems is the chief problem of the concern of the human-computer interaction, between system and user interaction depends on the user interface, the human-computer interaction technology is one of the important content of computer user interface design, it has to do with cognitive science, ergonomics, psychology, and other areas of the discipline has the close relation, is the modern information technology, artificial intelligence technology research is a hot direction. Human-computer interaction is simply “the way people and machines deal with each other”. The relationship between humans and computers is rooted in humans' use of computers as an effective computing service. Since the computer came into being, the computing power has become more and more powerful, and the attitude of human beings towards the computer has also begun to be different from that of the computer, which is just a dull “machine”, or it may become as smart as or even smarter than the human being. This ambiguous attitude has evolved with the evolution of computers. With the rise of deep learning technology, this process is further accelerated. The human-robot fingertip communication has gradually shifted from command communication to emotional communication, and in the evolution of this interaction, there are also some difficulties and challenges. In the long run, natural and efficient will be the inevitable trend of the future development of human-computer interaction, and the application of human-computer interaction technology will also have more and more close contact with human society.

2. Basic Elements of New Media Design Based on Virtual Reality and Human Computer Interaction Technology

The application of virtual reality technology and human-computer interaction technology in the new media design can enhance the user's sense of experience and give users more rich feelings. Therefore, the specific design should include four basic elements: stereoscopy, timeliness, scene sense and documentary, so as to give full play to the role of virtual reality technology and human-computer interaction technology.

2.1 Stereoscopic

In the new media design based on virtual reality technology and human-computer interaction technology, stereoscopy is one of the most basic elements. Traditional new media design is essentially a two-dimensional art, which has little visual impact on users. Virtual reality technology and human-computer interaction technology provide the possibility for three-dimensional new media design, making new media design fundamentally changed. In the new media design, the use of virtual reality technology shows a three-dimensional space, which is obviously different from the traditional two-dimensional design. In terms of visual effects alone, three-dimensional space is obviously better. At the same time, from the perspective of users, the three-dimensional space created by virtual reality technology can also include users in their works, so that users can have a better sense of experience. In general, people's response to space requires feedback from outside things, which is simply the segmentation of points, lines, surfaces and light. The application of virtual reality technology and human-computer interaction technology can optimize the details, and construct virtual space from human perspective or visual sense, so that users can feel the three-dimensional sense of space more truly. For example, for the current popular VR games, users can really feel the game scene through the handle or glasses and other auxiliary devices, and experience the visual effects brought by the three-dimensional virtual space, thus creating a good game experience.



Fig.1 Vr Games

2.2 Timeliness

In the new media design based on virtual reality technology and human-computer interaction technology, timeliness is one of the most basic elements. New media design in the traditional sense is usually a static art. The time changes in the created space are not obvious, but there will be specific time characteristics, such as the sun. However, the new media design based on virtual reality technology and human-computer interaction technology belongs to three-dimensional space art or dynamic art. In the created virtual space, the scene and time are constantly changing and updating, and users can experience changes in different scenes and time periods in a short time during the experience process. In this virtual space, time and space are out of control of reality, and the designer is the master, giving users a variety of experiences. For example, in some VR experience halls in scenic spots, tourists can experience the different sceneries of the scenic spot all the year round in a short period of time, and experience the sceneries of different places and periods of time in the scenic spot. The scenes are very lifelike, similar to the real scenic environment, which is a new experience for tourists.

2.3 Scenarios

In the new media design based on virtual reality technology and human-computer interaction technology, scene sense is one of the basic elements. On the one hand, specific scene sense can enhance the user's sense of experience; On the other hand, it is also one of the ways of human-computer interaction, which gives users a specific feeling by using a specific sense of scene. In the environment of the virtual scene, the pictures that the experiencer can see have a visual sense of the plot, theme, expression, etc. In addition, the emotional expression of the experiencer can make the pictures seen more vivid, specific and vivid, and the user's inner expression in the scene will be more profound than that of a viewer. The emotional changes that can be reflected and the scene changes generated by interaction can promote the user's immersion. For example, "From Life" works are presented in a new form through VR technology. No matter the reinterpretation of previous works, VR technology has changed the way artists create and display works, and also enriched the audience's sensory experience of participating in art. For new media designers, virtual reality technology and human-computer interaction technology give more possibilities and display methods to design work. Flexible use of these two new technologies can make the created virtual space more scene like.

3. Basic Principles of New Media Design Based on Virtual Reality and Human-Computer Interaction Technology

In the current new media environment, the application of virtual reality technology and human-computer interaction technology has become more mature and widespread, which has led to significant changes in new media design. It is no longer limited to screen art, but has enhanced interaction with users, paying more attention to users' psychological experience. Therefore, the new

media design based on virtual reality technology and human-computer interaction technology should follow the principles of interaction, virtuality and experience, as follows:

3.1 Principle of Interaction

The interactive nature of new media products mainly comes from the basic needs of the works and user feelings. If the products lack interactivity, they will lose their original virtual entertainment and communication features, reduce the value of the products themselves, and have relatively limited appeal to users. Therefore, interactivity is one of the cores of new media design and an important part of the whole design work. The interaction of new media design based on virtual reality technology and human-computer interaction technology has the nature of two-way transmission, that is, communication and feedback between users and products, products and designers, designers and users. In the created virtual environment, everything has been user led, and the feeling and influence generated by the direct or indirect contact between the user and the virtual objects in the scene. In a virtual space full of imagination, users can immerse themselves in it to achieve the selfless state. Through the images, images, colors, and textures felt by the five senses, the users will have a true and false sense of art, so that users and works can blend together. In the new media design based on virtual reality technology and human-computer interaction technology, users use different ways as the starting signal of interaction, such as touch, space movement, sound, etc., to finally realize the virtual interactive nature.

3.2 Principle of Virtuality

Virtual reality technology usually refers to virtual modeling through computers, and building an interactive virtual environment in which virtual space and auxiliary equipment finally achieve the integration of vision, listening and touch. Users can use some relevant auxiliary equipment to conduct real operations in the virtual space to achieve the real effect of the real world. Virtual world is not only the embodiment of technology, but also a diversified comprehensive experience. It can let users contact with some unknown space or environment, and produce a new experience. To some extent, it will also have a certain impact on users' perception of the world. With the continuous improvement of virtual reality technology, it has been used in many fields, including new media design, and has produced good results. Through the creation of different forms of elements, a large amount of data is integrated with each other and finally displayed on the display, and auxiliary tools are used to generate feedback on the virtual signal language, finally reaching the form of interaction. This form of feedback itself has become a very interesting form of artistic expression. In the new media design based on virtual reality technology and human-computer interaction technology, the virtual space created by using virtual reality technology is more attractive to users and can effectively strengthen the communication effect of new media design.

3.3 Experiential Principle

In the new media design based on virtual reality technology and human-computer interaction technology, the characteristics of interactivity indicate that users need to feel and experience the virtual scene with their own actions in the process of experiencing the virtual environment. When users participate in the virtual environment, they become a part of the new media design works, and then the whole work can be truly completed. As the ultimate service object of new media design is people, we must pay attention to the user's sense of experience, and require users to participate, feel and understand in the design. Only in this way can users better feel the interactivity and obtain more intelligent and humanized experience value. Users need to experience the entertainment brought by virtual reality by participating in art activities or artistic creation. At the same time, the user experience also has a lot of curious exploration psychology, which makes the work can achieve the best effect. And during the experience, the virtual reality art works will bring various emotions, emotions and feelings to the experiencer. The emotional experience is based on the experience of traditional art works. Therefore, in the virtual roaming works, it is not only shown in the effects brought to users by the current high-tech, but also in remembrance of the past art. Experiencing in design has time continuity, historical sense of memory and experience. Therefore, when making

virtual roaming works, we should start from the principle of experience, plan the origin of the works, and consider from multiple angles the final experience effect of the works for users, so that users can achieve the best experience effect in the virtual environment.

4. Research on New Media Design Based on Virtual Reality and Human-Computer Interaction Technology

4.1 Design Idea

In the new media design based on virtual reality and human-computer interaction technology, design idea is one of the most critical elements, which will have a direct impact on the communication effect of works. The core goal of new media design is to achieve the established communication effect, so that users can have a good experience. It can be said that the ultimate service object of new media design is people. From this perspective, user thinking is one of the most important design ideas of new media design. As a new media designer, it is important to skillfully use virtual reality technology and human-computer interaction technology, but it is more important to have user thinking, that is, from the needs of users in the design process, the overall design of works and the construction of virtual space should be user oriented, and users can have a good experience by optimizing the layout of details. At the same time, we should pay attention to human-computer interaction, highlight the interactivity of works, and enhance the sense of participation of users, which is also one of the key factors affecting the dissemination of works. In the current new media environment, there is more room for users to choose. The rapid development of We Media has made the information communication channels more diversified, which means that the competition within the media industry is more intense. As a designer, we must change our traditional ideas, base ourselves on user needs, and flexibly use virtual reality technology and human-computer interaction technology to bring users into the vast virtual world, It can not only enhance users' recognition of the works, but also strengthen the communication effect of the works.

4.2 Aesthetic Characteristics

Virtual reality technology and human-computer interaction technology, as two representative high and new technologies at present, have been deeply and widely applied in many fields. But when people talk about technology, they often think that the products derived from the development of technology do not have aesthetic value, and will inevitably be abandoned with the development of the times and technology. However, in the new media design based on virtual reality and human-computer interaction technology, the works designed by using virtual reality technology and human-computer interaction technology have aesthetic value, including the aesthetic value of technology and art, which has significant aesthetic characteristics. As a new media designer, flexible use of various technical means in the creative process can not only make the creative process more convenient and efficient, but also make many creative inspiration possible. It can be said that the aesthetic value of a certain aspect of the work is given by technical means. In the current new media environment, special emphasis is placed on user experience and perception, of which aesthetic experience is the most critical point. To some extent, user aesthetic experience is also the embodiment of user emotions, feelings and other psychological characteristics. This requires designers to improve the artistic value of works in the design process, so that users can feel the artistic beauty of works in sensory experience. In the new media design based on virtual reality and human-computer interaction technology, virtual space is a kind of art media, which can freely volatilize its own emotion and produce aesthetic value. Just as the audience is experiencing the immersion and interactive fun brought by virtual art, from the simplest viewing to the direct inner feelings, the artistic aesthetic value brought by virtual reality art is far higher than the traditional art style⁵. Epilogue

The combination of virtual reality technology and human-computer interaction technology can build a virtual space with interactive characteristics. For new media design, the emergence and application of virtual reality technology make it rise from two-dimensional space to three-

dimensional space; The development of human-computer interaction technology makes new media design more interactive, which is a subversion and innovation for new media design. In the long run, with the development and maturity of various high and new technologies, new media design will truly become a three-dimensional art. The works will present users with three-dimensional, temporal and scene sense of three-dimensional space, and its attraction and communication effect will be further enhanced.

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