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Analysis of the Impact of Modern VR Technology on Digital Media Art Design

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Abstract: With the rapid development of modern science and technology, the style of design work has also changed accordingly. The development of virtual reality technology (hereinafter referred to as "VR technology") has derived many new art forms, which has caused a serious impact on digital media art design. If digital media art design wants to develop, it should keep up with the development perspective of The Times and think about the application of VR technology. Li Zhengdao, a famous scientist, once said: "Art and science are two aspects of one, both of which come from the most noble part of human activities, and both are seeking universality, depth and eternity." In modern society, with the development of visualization technology and the diversification of human-computer interaction forms, VR technology has attracted wide attention, which is also one of the important factors to promote the development of mathematical media art design. In this regard, this paper analyzes the influence of modern VR technology on digital media art design, in order to promote the development of digital media art design, and make it better adapt to the diversified needs of the development of modern society.

1. Introduction

At present, China has entered a rapid development of the information age, the rapid progress of computer and network technology, the application prospect of VR technology is increasingly expanding. In view of this, to make full use of VR technology to promote the further development of the field of digital media art design, the design staff should fully grasp the positive influence of VR technology, and explore the combination, so to better improve the design quality through VR technology, cater to the new demand of digital media art design, and promote the further development in the field of art design in our country.

2. Basic concepts and characteristics of VR technology

2.1 Basic concepts of VR virtual reality technology

How VR technology works is to create an immersive virtual environment through a variety of technological means. The good development of modern VR technology cannot be separated from

the full development of sensor technology, simulation technology, multimedia technology, human-computer interaction technology and other digital technologies, these technologies integrate with each other, without any one, it is difficult to render a three-dimensional, immersive 3D virtual reality environment. In this environment, the communication and contact between users and virtual objects are more natural, reflecting the incomparable interaction of other technologies. Moreover, the 3D virtual reality environment can also highly restore some things in real life, which can fully improve the users' cognitive ability of people in the world. Nowadays, China's VR technology has become more and more perfect, and has achieved good application results in the education field, medical field, entertainment facilities and other fields[1].

2.2 Key characteristics of VR virtual reality technology

2.2.1 New multisensory interaction

Today's society is an era of rapid development of information. The social development produces a large amount of data every day. As shown in Figure 1, the hierarchy of information interaction constitutes the fundamental pillar of the progress of human civilization. VR technology, as a cutting-edge technology, is the product of the convergence of many technologies, but it is not only a simple superposition or mechanical patchwork of technology[2]. Instead, it combines the unique features of the various technologies to create a whole new one. For art creation completed using VR technology, its interaction is a kind of comprehensive interaction, including original interaction, tool symbol interaction, but also includes other interactions, such as sound, feeling, gesture and so on. With the continuous development of VR technology and the deepening of human-computer interaction, the development space of VR technology will be broader.

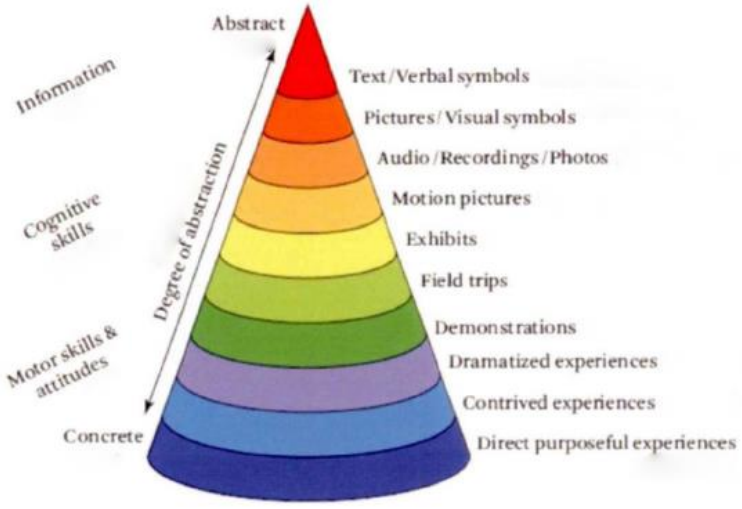

Figure 1: The hierarchy of information interaction

2.2.2 Immersive experience

The degree to which one receives information is directly related to the degree of concentration.

The "virtual world" built by VR technology can provide users with an impression of immersive experience and a better experience than other modes of communication. Users observe the world from the inside out in a highly simulated virtual scene. In addition, the application of VR technology allows users to temporarily isolate themselves from the real world and no longer be disturbed by the real environment, so that they can more directly and effectively contact relevant information. In this way, people can experience the sense of reality in the virtual world, so as to

deepen their understanding of the virtual world. Due to the sense of reality created by the virtual world, users can be immersed in it and temporarily forget the time and empty factors in reality.

2.2.3 Characteristics of autonomy

Another core feature of VR technology is its autonomy, which can also be called creativity. This feature means that users can interpret and analyze the surrounding environment according to their personal perception, and use their own feelings to deal with or integrate into various situations in the virtual world, such as collecting all kinds of beneficial information. Users, the experience in the virtual world seems to be in the real world, but also can fully show the user's subjective initiative[3].

3. The advantages of applying modern VR in digital media art design

3.1 Emphasize the authenticity of digital media art design

In the field of digital media art design, using VR technology can fully expand the imagination of designers, and design space will become more substantial, is conducive to the designers in the art design, from the character, sound or scene Angle, thus the advantages of VR technology to the extreme, in order to fully improve the overall performance of design works, make it more artistic, improve the user experience. For example, the application of VR glasses can enable users to take some basic actions, so as to experience the difference between the virtual world and the real world, and with the help of sound rendering, the user's experience is more immersive. In addition, object technology is now widely used in the field of film and television production. Designers use VR technology to create scenes that can not be realized in the real world, so that users can give full play to their imagination when creating, and make viewers have a refreshing feeling. In addition, VR technology can create a diversified virtual space, add rich hierarchical effects to film and television works, and make full use of the advantages of VR technology, which can significantly improve the interaction degree of the scene, and enhance the interaction experience between the experiencer and the scene[4].

3.2 Strengthen the formalization of digital media art and design

The rational application of VR technology can effectively strengthen the formalization of digital media art design, which is conducive to the designers to better complete the diversified design, and make the design products more diversified and rich. From the user's point of view, when applying VR technology, it can be analyzed from different starting points, as shown in Table 1.

Table 1: Digital Media art design under VR technology from the user Angle

product type	application value	usage experience
Digital media art design products based on VR technology are rich and diverse in types, and designers can make the scene more realistic with the help of sound effect rendering.	The application of VR technology can effectively complete the synchronization of relevant data, and can effectively improve the work efficiency and quality.	Due to the immersive experience of VR technology, the user experience is more rich and more convenient, which is conducive to the users to enter the working state in a relatively noisy environment.

3.3 Improve the quality of digital media art and design

Designers can perform real world simulation through VR technology to ensure the quality and level of digital media art design works. Designers can complete the work with the help of VR technology. Due to the continuous improvement of the scenes, pictures and sounds in the virtual world of VR technology, the work efficiency of digital media art design has been significantly improved. First, VR technology can significantly improve the efficiency of scene construction, which helps the designers to design more easily and quickly, and ensure the authenticity. Second, then the application of VR technology can also help the designers to adjust the construction scene in real time, which can effectively improve the design speed and quality.

4. The specific impact of modern VR technology on digital media art design

4.1 Deep integration of technology, art and design to expand the tension of artistic expression

Wu Nanni, a scholar at the Central Academy of Fine Arts, said that with the help of mathematical technology, art has ushered in new opportunities for development. By rebuilding the bridge between the input and the output, the user stimulates the desire to explore the surrounding environment and surprises the user[5]. Subsequently, the distance between the experiencers and the work is adjusted, and the unique experience caused by human-machine integration is constantly explored. In the new art form, a new perception mode and feedback mechanism are shaped for the experiencer, breaks the traditional shackles and framework, and promotes the further sublimation of visual art, as shown in Figure 2.

Figure 2: Penetration - Charlotte Davis

The experience of this work requires the help of a wearable induction vest and a head-mounted display. The function of the sensor vest is to capture the breathing movement of the experience and the expansion and contraction of the chest during the experience, while tracking the spine curvature on both sides of the torso, the inspiration rises, and the breath drops. The data collected by the induction vest is transmitted to the host machine and presented by image processing technology.

Charlotte Davis, an artist who focuses on painting and film and television, has made many attempts to help people break down old ideas and prejudices through virtual reality works. Charlotte Davis uses a more poetic virtual world design style, combined with the "breathing interface", to develop a novel way to allow users to perceive the real environment in the virtual space.

4.2 Extend the traditional image creation into the recreation of visual art

With the development of The Times, people's visual requirements for the digital media art design are getting higher and higher, and the new requirements also promote the further development of the visual culture of the digital media art design. With the rapid development of society and the progress of science and technology, designers will also be troubled by the image culture when conducting image creation. With the more contact with images, the sense of dependence will be stronger, resulting in the decline of the artistic creativity and imagination of designers. The development of digital new media brings new development opportunities for designers, but also makes designers more sensitive and free in the later stage. The uniqueness of media art is reflected through the unique artistic language, which also makes its expression more comprehensive and true. In the later development, VR technology is not only to create a real scene, but to make a new definition of the design content in a new way, and to give people a better understanding of the scene from many aspects, to understand the connotation behind the work, so as to bring more intuitive experience to the audience. In addition, with the help of VR technology, two-dimensional, three-dimensional and multi-dimensional space is reconstructed, which can give full play to the imagination of designers and turn it into reality[6].

4.3 Promote the digital media art design performance more flexible and diversified

The application of VR technology in the field of digital media art design has greatly enriched the expression forms of design works. For example, for the design and performance stage of indoor space, VR technology can be used to achieve the virtual reproduction of real scenes. Although this simulation is not an entity in reality, but a virtual space created through interaction, it also brings a new visual experience to the experience-rs. For another example, in the housing architectural design, the application of VR technology helps to improve the overall quality of architectural design. Designers can adjust and create freely in the virtual space, and change the perspective through gesture operation, so that the experiencer can appreciate the beauty of the building from multiple angles. It can be seen that the application of VR technology can promote the integration of digital media art design and other design fields, and create a unique way of artistic expression.

5. The practical application of modern VR technology in digital media art design

5.1 Digital game design

In the late 20th century, China's game field entered a stage of popular and in-depth development. The introduction of a large number of foreign high-tech has significantly improved the development and design in the field of China's game production, and greatly improved the experience, reality and stimulation of game players. The strong sense of immersion and imagination makes the traditional game world more exciting, bringing a variety of game experience for players, and is fully satisfied in visual, auditory, tactile and other aspects[7].

5.2 Internet media design

Internet media design takes image as the means of information transmission, and integrates VR technology into Internet media. Design, it can greatly expand the diversity of information transmission. Through a variety of electronic devices and perception communication devices, the surface, deep and even nervous system of human skin is stimulated in an all-round way, and more diversified artistic and visual feelings can be provided for creators and audiences. At the present stage, some network media use VR technology to build a new platform, presenting a new viewing experience for the audience.

5.3 Digital display

In the traditional way of information presentation, it generally relies on computers, monitors, sound and other hardware to transmit information, which needs to be improved in terms of interactivity and entertainment. In the display link of digital and word media art works, the application of VR technology can effectively solve the above problems. For example, some museums and art galleries have begun to use VR technology to conduct three-D virtual display of exhibits and artistic creation, which is not only conducive to the protection of precious cultural relics and artistic heritage, but also enriches the audience's visiting experience and increases the diversity of viewing.

6. Optimization strategy for the application of VR technology in digital media art design

6.1 Improve contextual interaction

Further exploring the optimization of VR technology in the field of digital media art design, it can be found that the application of VR technology brings a new interactive experience and immersive experience to digital media art design. The introduction of VR technology creates a more vivid interaction between the experiencer and the art work. With the help of this interaction, the viewers' grasp of the connotation of the work is improved, and the emotional connection with the work is also enhanced. Specifically, the application of VR technology in digital media art design should fully leverage its strengths in situational interaction. To begin with, it is essential to conduct thorough technical optimization to ensure the scientific application of VR technology. Additionally, efforts must be made to enhance the usage environment for VR technology and establish a comprehensive evaluation and audit system for digital media art design[8].

6.2 Expand the production form

The application of VR technology to digital media art design is not just a simple combination of art design and VR technology, but also a combination of art design and computer technology. It can be said that the production form of digital media art design has been fully expanded to create a more realistic visual experience for the experiencers. The best countermeasures to apply VR technology to digital media art design are as follows: first, enrich the form of creation. In the traditional digital media art design, because it is basically two-dimensional design, so it is difficult to play the three-dimensional role of design works. Combining VR technology and digital media art design can transform two-dimensional design into three-dimensional design, and make abstract works more three-dimensional. Second, to improve the production efficiency. In the design of digital media art, the impact of VR technology on the production efficiency should be fully considered. If the production efficiency is not good, the quality of the works will be reduced. Third, we should

strengthen the study of VR technology.

Research shows that the application of VR technology involves various aspects. In order to ensure that VR technology gives full play to its role, designers should actively learn the knowledge related to VR technology.

6.3 Improve the innovation of digital media art and design

In the field of digital media art design, various forms of film and television, animation, visual image and text are widely used to carry out the design and promotion of design works. How to enhance the visual impact of digital media art design while following the basic requirements of digital media art design has become a hot topic in the industry. Especially in the increasingly interactive nature of digital media art today, the integration of VR technology and digital art design, and then combined with film production, theater layout and sound effect, plays an important role in improving users 'sense of immersion and catering to users' aesthetic pursuit. The introduction of VR technology not only opens up a broader creative world for designers, but also injects more innovative elements into digital art design. Designers use VR technology in the creation, so that users can more directly appreciate the charm of the real world in the virtual environment.

6.4 Expand the digital media art design approach

In the field of digital media art and design, compared with the traditional film and television production technology, VR technology has shown more powerful advantages and achieved a technological breakthrough. The scene rendering ability and panoramic video production of VR technology greatly enhance the interactivity of the virtual environment, and can effectively improve the immersive experience of users. With the help of VR technology, experiencers can experience the plot of the film and feel the unique charm of art works in an all-round way. At the same time, with the help of VR technology, the audience can also interact with the work, and integrate their own imagination when interacting with the film and television characters, so as to immerse themselves in the feelings that the work wants to express. In the design of VR art works, the designers should start from the perspective of the experiencer, innovate and produce the plot development, character shaping, action and sound effects, so as to build a rich and diversified story plot and visual feast. In the process of script conception and language construction, creators can rely on VR technology to improve the creative quality of film and television works. As for the field of game design, the application of VR technology realizes the organic unity of interactivity and player immersion. By integrating technology with special creative techniques, users can experience a more natural and relaxed real experience in the virtual game environment.

7. Conclusion

To sum up, with the progress of science and technology, the application of VR technology in the field of digital media art design is increasingly perfect, and its influence is increasingly prominent. The deep integration of modern VR technology and digital media art design shows its unique charm, which not only enables practitioners to deepen the application of VR technology, but also greatly enriches the connotation of design work, and lays a solid foundation for the expansion and improvement of the design field. Thanks to the help of VR technology, designers can inspire more creative inspiration, broaden design vision and enrich design methods, so as to present users with more excellent and pleasant visual enjoyment.

References

[1] Guo Haoyue. How to use VR technology effectively in digital media art design [J]. Footwear technology and design, 2023, 3 (15): 177-179.
[2] Zhang Ying. How to effectively use VR technology in digital media art design [J]. China New Communications, 2023, 25 (01): 103-105.
[3] Mao Wei. Application of VR technology based on Image Core in Digital Media Art Design [J]. China Media Technology, 2022, (12): 65-68.
[4] Zhang Jing. Research on Digital Media Art Design System based on VR technology [J]. Electronic Technology and Software Engineering, 2022, (18): 54-57.
[5] Xu Bin. Research on the application of VR technology in digital Media Art Design [J]. Footwear process and design, 2022, 2 (11): 68-70.
[6] Fan Tao. Explore how to effectively apply VR technology in digital media art design [J]. China National Expo, 2022, (07): 192-194.
[7] Lu Ting. A brief review of VR technology in Digital Media Art Design [J]. Computer Knowledge and Technology, 2021, 17 (25): 121-122 + 129.
[8] Zhang Rui. Application of VR Technology in Digital Media Art Design [J]. Journal of Beijing Institute of Printing Technology, 2021, 29 (S1): 246-248.