Research on the Innovative Application of Digital Media Art Based on Virtual Technology in Animation Design

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Abstract: The application of virtual technology (VR, AR) in the field of digital media has effectively promoted the innovative development of digital media art creation forms, and achieved the improvement of innovation level and efficiency. Therefore, based on the concepts related to virtual technology and digital media art, theoretical and practical analysis has important practical significance for promoting the application level of virtual technology and promoting digital media art innovation. As a branch of digital media art design, animation design has become an important research market and field in the IT industry. With the gradual maturity of virtual technology, it has become an inevitable development trend in the animation interaction behavior. This paper starts from the current high-tech, analyzes the technical support based on future technology, discusses the possibility of the concept design of the animation character introduction method, and studies the development trend of the future animation character concept design.

1. Introduction

Technology is changing people's social entertainment methods step by step, and we are already in an era of passive tracking and being promoted to devices outside the network and the environment around us, the Internet of Things (IoT). Constantly quantify self-data and combine it with the Internet of Things to produce real-time records of massive data about our range of lives – Big Data, and through Augmented Reality (AR), people can use lens devices on mobile screens or Google Glass. On the social entertainment activities, the animation industry has always been at the forefront of technology. The future animations must be based on high-end animation engines. The purpose of animation is to realize the desires and appeals that people can't realize in real life during the animation process. Some kind of venting, time consumption, etc. There are many possibilities for the development of future anime character based on VR technology.

VR virtual reality technology is a high-end and complex computer technology. Its rational use is closely related to the life of modern people, and has been widely praised by a large number of electronic product enthusiasts. Simply put, VR virtual reality technology works by using modern science and technology to create a virtual space for users to fully immerse themselves in this virtual space. In recent years, the animation industry has been highly valued in China's economic construction. Combining animation design with VR virtual reality technology has become an inevitable choice for the modern animation industry.

2. Basic introduction to virtual technology

VR virtual reality technology is a new type of comprehensive information technology. Its practical application process is interactive, immersive and conceived, collectively referred to as "3I features." Users can use VR virtual reality technology to enhance various experiences in reality, break the limitations in specific scenarios and specific environments, and maximize the real experience of users beyond reality. VR virtual reality technology combines a variety of advanced science and technology in the actual operation process, such as computer image display technology, computer simulation technology, computer process processing technology, etc., through the

reasonable use of different types of technology, the final realization of imitating the user's sense of smell, The effects of hearing, vision and touch [1] create a virtual and real world for the user. At present, VR virtual reality technology has been highly valued in various fields due to its excellent functions, and plays an important role in cultural relics protection, interior design, traffic simulation, animation design and other industries [2].

3. Using virtual technology for animation design innovation

3.1 Virtual Technology Anime Characters 3D Design

This paper studies the existence of virtual reality technology. It includes something fuller than the general objective physical reality, including some virtual elements, similar to a plausible objective existence. The virtual reality view mainly describes the creation of scenes such as characters and landscapes from two layers, that is, the physical level of objective existence and the spiritual level of subject aesthetics, the new technology concept of interface ablation, the new art view of virtual reality, and the aesthetics of active experience. The combination constitutes these two spiritual levels [3]. Figure 1 provides a detailed description of the virtual reality concept.

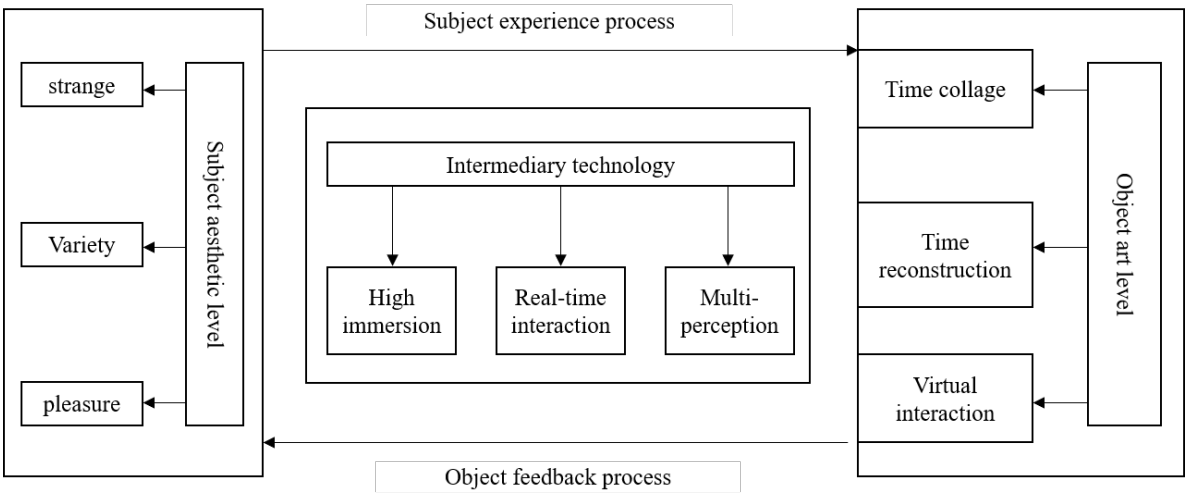

Figure 1. Virtual reality view

In order to satisfy people's forms and requirements for the experience of the illusory world, virtual reality technology integrates more virtual elements on the basis of objective existence such as landscape and characters, giving the experiencer a different sense of picture. In this new form of experience, people can acquire different sensory and visual experiences. It is also a process of satisfying curiosity, exploring knowledge, and having fun. People see, hear, and touch in a simple and natural way. The perception of the virtual reality world enriches the imagination and self-experience, and enhances wisdom and creativity. The above content is the theoretical basis of this article, and then the 3D design of cartoon characters based on virtual reality technology will be studied in detail.

3.2 3D animation virtual system design process

The development of digital information technology has led to the rapid advancement of virtual reality technology and 3D animation design. The powerful and excellent software and hardware animation design products are emerging. Based on the rigorous analysis of the characteristics of the two, this paper has carried out in-depth research on the combination of VR technology and 3D design technology of anime characters, and gives the design flow of 3D animation virtual system [4], which is described in detail in Figure 2.

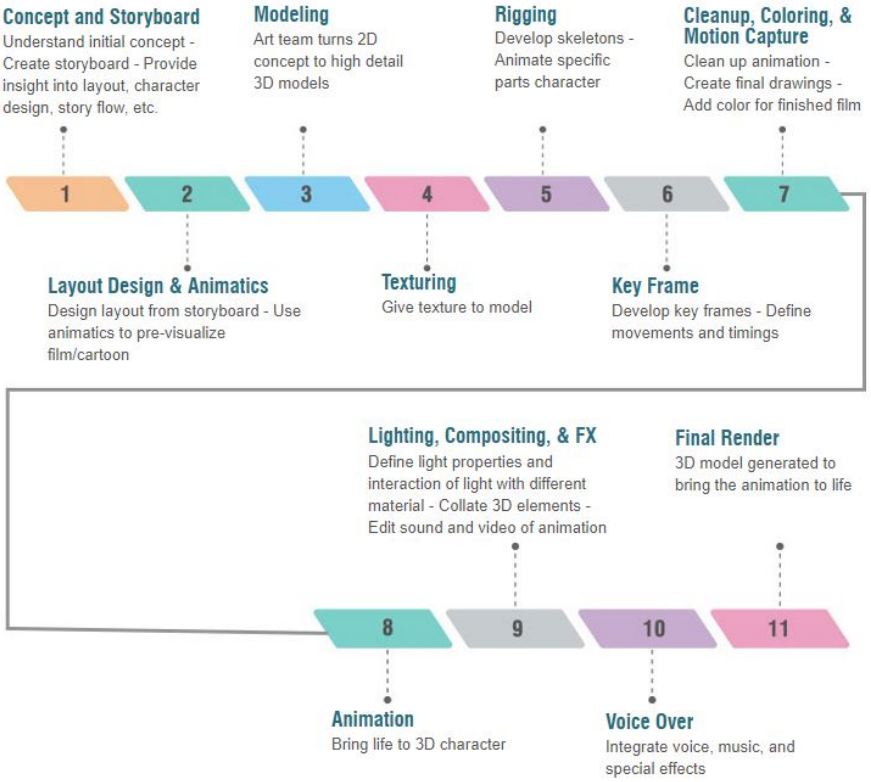

Figure 2. 3D animation design process based on virtual technology

The three-dimensional model design, motion capture system and the production of cartoon characters are the three main parts of anime characters and scene production, while the design of virtual and real technology and anime three-dimensional characters complement each other. The whole design system has rationally summarized animation technology, VR equipment and network technology. The whole system is composed of motion capture technology, interactive input device, and stereo projection technology and network virtual platform. In the process of performing three-dimensional anime viewing, the experiencer cannot only see various immersive scenes and characters, but also participate in specific scenes, and swim in the anime from his own perspective to obtain different. Watch the experience. The system combines VR technology with three-dimensional design of anime characters, and the produced anime characters have the characteristics of strong participation and excellent real-time effects [5].

4. Anime character concept design brings in interactive feeling

4.1 Combining 3D technology - role-playing design

Through the 3D projection device, the anime designer makes the anime player's life, learning, social and other environments into an anime scene. From time to time, there will be a small monster appearing in it. The player directly acts as an anime character and can be killed by the hands and feet and devices like the handle. In addition to visual and auditory, players rely on the sense of touch to perceive the world. For this reason, airing technology, an aerodynamic device, was invented by Rajinder. Through this device, air bubbles can be simulated in different directions and strengths. Really feel the experience of carrier impact in animation, the technology has been applied to the Shanghai Disney theme park. Future display devices are also moving from 2D to 3D. Today's display devices: computers, TVs, iPad, mobile phones, etc. limit people's experience to two-dimensional worlds. Daniel Leith Inger, MD, Media Lab, MIT, is studying this the flat-panel device has changed into a three-dimensional world. The research result is that a number of stereoscopic screens resembling "building blocks" are combined to simulate different shapes. When the toy is placed on the screen, another person can actually see and Touch the simulated toy. The

second result of the research is: to make virtual actions on the computer, the remote three-dimensional screen can simulate the action, which is a new way of human-computer interaction, which can realize remote animation control in the future [6].

4.2 Extending the animation field to the unknown world - (super) remote control design

With the rapid increase in the number of human beings and the advancement of science and technology, human beings may develop into outer space and obtain resources. Anime developers may design animation tasks that require remote control: because some space environments are not suitable for human survival and cannot be directly when you go to outer space for contact and experience, people can take VR equipment to eliminate 3D vertigo, virtual reality phobia, and emergency heart disease. VR is a great anime carrier, and players bring a near-real sensory experience. Immersive VR has its own unique immersion, interactivity and conception. Players in the main body will have fun and information through human-computer interaction. Immersive VR animation follows the characteristics of traditional anime, enhances immersion and interactivity, and this interactive large-scale interactive interaction with ultra-remote control of outer space Anime mechanical equipment is combined to achieve the purpose of experiencing an environment that is impossible to reach. In the future, the portability, compatibility and ease of use of VR will be upgraded to a certain level. At that time, the real phenomenon-level animation will come into being.

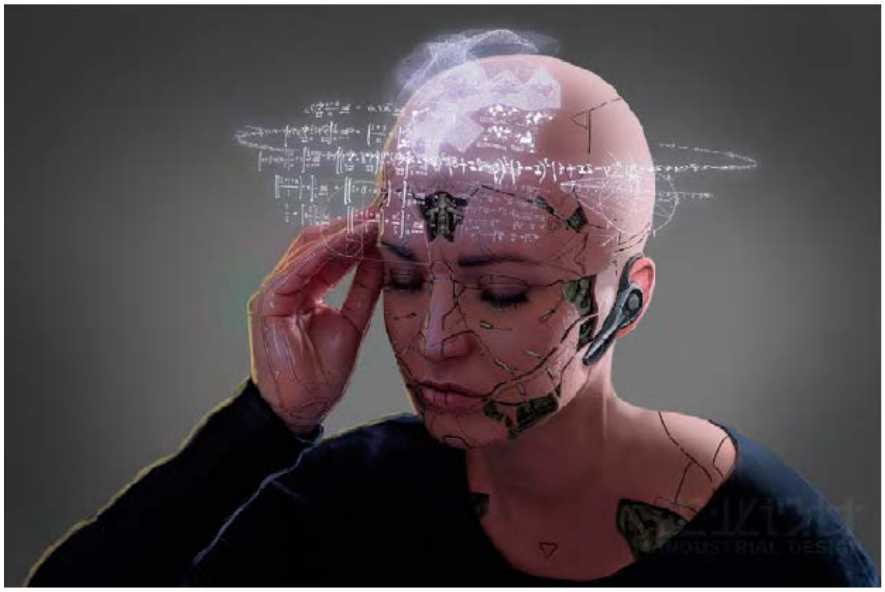

Figure 3. Filip Dudek works

4.3 Based on human-computer interaction technology - wearable anime character design

Columbia University proved that economist Jeffrey Sachs had participated in the editor of the UN World Happiness Report. He pointed out: "Since 1960, American GDP has tripled, but people's happiness index has not changed. In this respect, the measurement of happiness is based on subjective feelings of happiness, which means that people need to use digital scales to assess their happiness. With the advent of social media, wearable devices and the spread of data processing technology, capturing happiness data has become more commonplace and easier to drink. At present, it can be said that no technology can fully quantify a person's emotional state, but in the future animation design, through the wearable equipment, the animation agent can provide the corresponding "agent data" of animation behavior and emotion. And the insights gained from these proxy data can determine happiness and happiness, especially health-related happiness data [7].

Figure 4. Interactive experience caused by wearable animation devices

Wearable devices have entered the consumer market, especially in the industrial design and electronic devices arena, according to market research firm ABI Research, by 2018, the wearable data processing equipment market will grow to an annual delivery of 485 million Scale, and in the future animation character concept design, will also make full use of this technology, so that anime players wear a variety of animation equipment, mechanical weapons, etc., through the sensors in the wearable device, thereby output the tracked data, and the server Contact, learn about the physical and emotional changes that you consume in the animation process, and various other personal data. Use mobile sensors and other technologies to determine what will bring life and art to people. The animation system can analyze anime players. The behavior and data, the establishment of personal data index, so as to quantify the user behavior indicators, a large number of scientific literatures proves that action and altruism can improve the happiness index, anime players wear animation equipment with tracker, in the animation experience process Learn more about yourself and release yourself

5. Conclusion

In summary, the future animation market will inevitably develop towards VR. At present, as the market is still in its infancy, it will take some time to popularize in the short term. On the one hand, due to the terminal equipment, popular mass-type hardware devices can be popularized. There is still a need for development, but as far as the market is concerned, the platforms and companies that develop VR products continue to increase, so VR devices will mature in the future. On the other hand, VR animation requires sufficient space for home use and limited time. Due to the user's physique, the average player playing VR animation for 2 hours is almost the limit. Therefore, there is still a long way to promote VR animation. The study found that the Global Brain Institute in the United States is studying the evolution of human beings. It is expected that by 2040, with the help of artificial intelligence technology, the average life expectancy of human beings can be raised to 120 years old, then humans will have more leisure time to develop. Their own hobbies, and the current market will mainly be dominated by AR mobile games.

However, as VR technology continues to improve, VR will model the dynamic environment in the future, generate 3D images in real time, and finally artificial intelligence. Next generation animation will provide us with a more exciting and realistic sensory experience. Impossibility is possible. On the one hand, artificial intelligence, time and space travel, 4D space, and biochemical age will all come in advance in the way of animation experience. Users can achieve the best state of flow through various ways of VR animation experience. A state in which the user's physiology and psychology are brought to a limit, thereby achieving deep satisfaction due to insurmountable challenges. On the other hand, animation is also a good entry point for changing lifestyles. Many of

the conceptual designs proposed in animation are finally applied to real life, and can also meet the needs of people's needs.

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References

[1] Chen Xiaoqun. Analysis of Virtual Reality Technology and 3D Animation Technology. Art Review, Vol. 2 (2017) No.28, p. 103-105.

[2] Liu Minjuan, He Shiwen. Design and Implementation of Architectural Roaming Animation Based on 3D Virtual Technology. Electronic Test, Vol. 5 (2013) No.23, p. 147-152.

[3] Sun Dong, Wang Chao. Application of Virtual Reality Technology in Commercial and Architectural Animation Design. Design, Vol. 5 (2017) No.29, p. 26-27.

[4] Fu Jianming, Bao Yan. Graphic Design of 3D Animation Scene Based on Virtual Reality Technology. Modern Electronic Technology, Vol. 21 (2017) No.14, p. 67-69+73.

[5] Zhao Wei. Three-dimensional design of cartoon characters based on VR technology. Modern Electronic Technology, Vol. 16 (2018) No41, p. 180-183.

[6] Zhang Jie. Design and Implementation of Interaction and Animation in Virtual Campus Based on VRML. Digital Technology & Applications, Vol. 9 (2011) No.17, p. 36-37.

[7] Zhang Songtao, Gu Zutao. Application of Virtual Reality Animation Technology in Urban Planning and Design. Science and Technology Innovation, Vol. 5 (2010) No.25, p. 63-69.