

Exploring the Aesthetic Experience in Virtual Reality Applications: A Cross Border Art and Technology Integration

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Abstract: As a cutting edge technical achievement, virtual reality technology, through a high simulation environment and sensory input, the user seems to be in another world, and feels the immersion of vision, sound, and space, and brought us an unprecedented aesthetic experience. The cross border integration of art and technology in virtual reality has brought us a wider artistic creative space and a richer aesthetic experience. The cross border integration of art and technology in virtual reality has brought us a wider artistic creative space and a richer aesthetic experience. Through the realization of innovative design concepts and technology, the application of traditional art forms in virtual reality has created more unique and shocking virtual reality art works for us. It not only provides a new form of artistic expression, but also brings us. More deeper and comprehensive artistic experience. With the continuous progress of technology and the continuous expansion of application, virtual reality technology will bring us a more realistic, rich, and diverse aesthetic world. The cross border integration of art and technology will also become an important development direction in this field.

Keywords: Virtual reality; Aesthetic experience; Art and technology; Cross border integration.

1. Introduction

Today, the rapid development of science and technology, and virtual reality technology, as a cutting edge technical achievement, has penetrated into our daily life. In 1989, American scientist Jaron Lanier proposed the concept of "virtual reality" [1]. Scientists began to study how to simulate a realistic three dimensional environment through technical means. The continuous progress of computer graphics, sensor technology, human computer interaction and other technologies, virtual reality technology has gradually moved from theoretical to practice, from the original simple three dimensional model display to today's holographic projection and real time interaction. With the help of computers and other devices to create a virtual world with a variety of sensory experiences such as visual, touch, and smell, so that people in the virtual world have a feeling of immersive. In virtual reality art works, aesthetic experience is an important criterion for users to evaluate a virtual reality work. A good virtual reality art work must not only be skilled in technology, but also give users pleasure and satisfaction in aesthetic. The aesthetic experience involves visual design, sound music, and interaction methods of virtual reality scenes. These elements together constitute a complete virtual reality aesthetic system.

2. The Performance of Aesthetic Experience in Virtual Reality

2.1. Immersive aesthetic experience

In the era of digital technology and art blending, the immersive aesthetic experience of virtual reality art works has become a new aesthetic experience. Virtual reality technology is a technology and a new way of artistic expression, allowing viewers to have deep interaction and resonance with art works. The immersive aesthetic experience mainly creates a

comprehensive role in visual, sound, and space to create a world of perception beyond the reality.

Visual immersion is the most intuitive part of the immersive aesthetic experience. The artist simulates real images through computers, creating a new, amazing virtual environmental visual effect, making viewers as if in a dreamy world [2]. These visual effects can not only simulate various scenes in the real world, but also create fantasy scenes beyond reality. In this visual immersion, the viewers' eyes were continuously attracted and guided, and their attention was fully concentrated on the works, thereby forgetting everything around.

The important element of sound in the immersive aesthetic experience. The sound can not only increase the level and depth of space, but also guide the viewer's attention and emotional response. Through the clever sound design, the artist can let the viewer feel the broad, deep or intimate of the space, thereby generating a strong sense of immersion. At the same time, sound can also be combined with visual elements to create a richer sensory experience. For example, in virtual reality art works, sounds can change with the changes in the head movement and perspective of the viewer, creating a more realistic environment atmosphere.

Space immersion is one of the core elements of immersive aesthetic experience. In traditional art exhibitions or performances, viewers often accept information passively, and in immersive art, the viewer is invited into a three dimensional space carefully designed by the artist. This space may be a physical entity or a virtual environment generated by a computer. No matter what form, this space provides the viewer with a brand new perception framework that allows them to explore, interact and experience freely.

Immersive aesthetic experience is a comprehensive and sensory art experience. The Van Gogh immersive exhibition created by the Massimiliano Siccardi team, through the

comprehensive role of visual, sound and space, allows viewers to go deep into it and have in depth interaction and resonance with Van Gogh's works. This experience not only provides artists with more free and rich creative methods, but

also brings a deeper and unforgettable artistic experience to the viewers. With the continuous development of technology and the continuous innovation of art, immersive aesthetic experience will continue to develop in the future.



Figure 1. Van Gogh Exhibit <https://www.immersivevangogh.com/>

2.2. Interactive aesthetic experience

Interactive aesthetic experience is a distinctive feature of the integration of art and technology. Art works are no longer limited to traditional static ornamental, but emphasize the dynamic interaction between users and virtual environments, so as to provide users with richer, diverse and personalized aesthetic feelings. The core of the interactive aesthetic experience is the interactive design between users and virtual environments. Users through various input devices, such as handle, headset display, etc., real-time operation and control of the virtual environment [3]. It can adjust the expression and content of the virtual environment in real time according to the behavior and response of users, thereby creating a unique and personalized aesthetic experience.

In the interactive environment, users are no longer passive recipients, but become positive participants in the virtual environment. They can affect and even change the direction and results of the virtual environment through their actions and choices. This sense of participation and dominance has greatly enhanced the user's aesthetic experience and enables them to understand and feel the information and emotions conveyed by art works more deeply. The real time trigger mechanism of the virtual environment is also an important part of the interactive aesthetic experience. When the user interacts with the virtual environment, the environment will give corresponding feedback according to the user's behavior and response. This feedback may be visual changes, or it may be the stimulus of other sensations such as sound and touch. Through these feedback, users can perceive the impact of their behavior on the virtual environment in real time, thereby forming a close interactive relationship. With the continuous progress of technology and the continuous innovation of art, the interactive aesthetic experience will continue to deepen and develop, bringing users a richer, profound and personalized artistic experience.

2.3. Emotional Aesthetic Experience

Emotional aesthetics is the theory mentioned in the performance of music during the Baroque period, which aims

to vividly express or state an extensive range of emotions [4]. In the integration of art and technology, the emotional aesthetic experience has become a new pursuit of design. It not only pursues visual impact or technical advanced nature, but also pays more attention to how to touch the user's heart through the design content, which has caused them to be deep. Emotional resonance. Designers choose design elements such as color, shape, sound effects, as well as using narrative methods such as stories, contexts to build aesthetic experience that fits the emotional emotions.

Different colors can trigger different emotional reactions of users. For example, red may stimulate the passion and vitality of the user, and blue may bring users a quiet and serene feeling. The designer uses the color to create a compatibility with the user's emotional needs. Atmosphere and style. The shape and shape are also the key design elements in the emotional aesthetic experience. The round shape may make users feel warm and comfortable, and the sharp shape may cause users to be tension and vigilant. Through the changes and combinations of morphology, it creates a symbolic or metaphorical image, which triggers the emotional resonance of users. Sound can create an atmosphere, transmit emotions, and guide users' attention. Virtual reality can simulate various realistic sound effects, carefully select and design sound effects, creating unprecedented auditory feasts for viewers, which can make users immerse in the virtual world more. Feel more real and profound emotional experience.

Emotional aesthetic experience is a design concept and method that focuses on user emotional needs. It has carefully selected and used design elements and narrative methods to build a aesthetic experience that fits the emotional emotions. This experience not only allows users to feel the existence and charm of the beauty, but also trigger their deep thinking and perception.

3. The Cross -border Integration of Art and Technology in Virtual Reality

3.1. Application of traditional art forms in virtual reality

Virtual reality technology has opened a new sensing world. Traditional art forms such as painting, music, and movies have found a new stage and injected new vitality. Painting has been explained in virtual reality. The traditional canvas are replaced by unlimited digital spaces, and the painter's strokes are no longer physical restrictions. They can swill in three dimensional space as they want. In 2018, the School of Fine Arts of Tsinghua University launched the "Everything has Spirit Tsinghua University's Cultural Heritage Protection and Innovation Achievement Exhibition". The development team of the Academy of Fine Arts uses virtual technology to exhibit the "Han Xizai Night Banquet" [5]. The viewer no longer needs to stand quietly in front of the painting, but can walk into the painting and feel every detail and level of the work in the situation.

Virtual reality technology provides a new display platform and creative tools for traditional art forms, allowing traditional art to show new vitality and vitality in the digital age. The perfect combination of technology and art not only promotes the innovation and development of art, but also brings a richer and diverse aesthetic experience to the viewers. With the continuous progress of technology and the continuous exploration of art, the application of traditional art forms in virtual reality will be more extensive and deeper, creating a better future art.

3.2. Innovative design concept and technology realization

The innovative design concept is the core of the combination of science and technology and art. Technology and art, seemingly two very different fields, are intertwined more and more frequently in modern society. Traditional art design is often limited by the rules and restrictions of the physical world, while the addition of technology opens a door to infinite possible. Designers are no longer satisfied with simple forms and functions, but they begin to explore deeper emotional connections and user experience. They use scientific and technological methods, such as artificial intelligence, virtual reality, etc. to expand the boundaries of art and create works with both beauty and technology.

Technical implementation is the key to turning these innovative design concepts into reality. With the rapid development of science and technology, more and more advanced technology is applied to the art field. For example, 3D printing technology can achieve complex and fine artistic

shapes, allowing designers' imagination to be fully released, and virtual reality technology can bring an immersive art experience to the viewer, making them seem to be in the works. Artificial intelligence provides a brand possibility for artistic creation. Through machine learning and algorithm generation, we can witness the unprecedented artistic style and form.

The combination of science and technology and art is a perfect fusion of an innovative design concept and technology realization, which provides us with a new way of thinking, bringing a richer and diverse aesthetic experience. Technology and art are no longer two isolated areas. Technology provides more vast creative space and richer expression for art, while art has injected more humanistic care and aesthetic value into technology. Inspiration.

3.3. Cross border cooperation case analysis

The perfect combination of technology and art is undoubtedly Google's Google Arts and Culture. Google Arts and Culture is a digital platform for Culture and Art under Google. It originated from a plan launched by Google in 2011: Google Art Project uses advanced virtual reality technology to cooperate with many museums, art museums and cultural heritage agencies around the world. Using Google Street Scenic Technology to carry out high -precision three dimensional scanning and digital treatment of famous paintings and collections of famous museums and art galleries around the world for appreciation of global users. [6] Through cross border cooperation, the art treasures from all over the world have been successfully brought into the world of virtual reality, providing the public with an unprecedented artistic aesthetic experience.

This cross border cooperation is not only reflected in the use of technology, but also in the communication and experience of art. Traditional art exhibitions are often limited by physical space and time, while Google Arts & Culture breaks these restrictions and makes art everywhere. Users can immerse the charm of art at home, office, and even during the journey, and feel the charm of art anytime, anywhere. In addition, Google Arts & Culture provides users with opportunities to interact with art works through virtual reality technology. Users can not only appreciate art works at 360 degrees, but also enlarge details, switch perspectives, and even participate in virtual exhibitions and guides. This interactive experience allows users to understand and feel artistic works more deeply.

Google Arts & Culture's virtual reality art project is a model of successful technology and art cross border cooperation. It shows the infinite possibilities of technology and art. Application scenario and development direction.

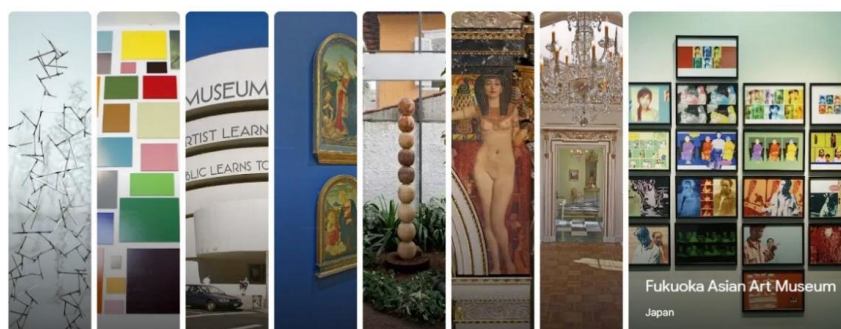


Figure 2. Google Arts and Culture

4. Conclusion

With the development of digital technology and intelligent technology, virtual reality technology leads the integration of technology and art with its unique immersive experience. Aesthetic experience is the core of human cultural life, it is related to our perception, understanding and creation of beauty. In the world of virtual reality, the aesthetic experience has been given a new dimension. Users are no longer passive observer, but can participate in the virtual environment in the situation to interact with art works. Let users feel the charm of art more deeply, thereby enriching their aesthetic emotions. The cross border fusion of virtual reality technology can not only be used in traditional art fields, such as painting, sculptures, music, etc., but also in deep integration with many industries such as movies, games, education, and medical care. Promote the research and development and innovation of virtual reality technology, improve the performance of hardware equipment, and optimize the software's interactive

experience, so as to provide users with a smoother and authentic virtual reality aesthetic experience.

References

- [1] Zou Xiangjun, Sun Jian, He Hanwu, etc. The evolution and development of virtual reality technology [J]. System simulation Journal, 2004 (09).
- [2] Ren Yangfu, Li Zhiqiang, Zhang Songhai. Multi scenario visual prompt information visualization methods in immersive environments [J]. Chinese Graphics Journal, 2024,29 (01).
- [3] Zhang Xuyao. "Dream Weaving": Virtual Reality Art Research [D]. Fujian Normal University, 2022.
- [4] Cao Zhonglu. New media interactive art emotional aesthetics and expression studies [D]. Hefei University of Technology, 2016.
- [5] Liu Yeran. Virtual Space Aesthetics of Digital Art [D]. Northeast Petroleum University, 2023.
- [6] Li Xin .Google Arts and Culture: Use data to interpret more possibilities of museum [J]. International brand observation, 2023 (18).