

Research on the Characteristics of Immersive Installation Art from the Perspective of Digital Media

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Abstract: This study explores the characteristics of immersive installation art from a digital media perspective. By analyzing the application of digital media technology in immersive installation art, including advanced technologies such as virtual reality (VR), augmented reality (AR), and artificial intelligence (AI), this study reveals how these technologies enhance the interactivity and immersion of artistic creation. The study also explored the innovation of immersive installation art in audience experience, emphasizing its advantages in multi sensory stimulation and personalized interaction. In addition, this study analyzes how immersive installation art integrates and conveys cultural connotations, reflecting the artistic concepts of contemporary society. Through comprehensive analysis of these characteristics, the study points out the future development trends of immersive installation art, including technological progress, cross disciplinary cooperation, and a balance between globalization and localization.

Keywords: immersive installation art, digital media technology, virtual reality, artificial intelligence

1. Introduction

With the rapid advancement of digital media technology, the field of artistic creation has also undergone profound changes. In these changes, immersive installation art, as an emerging art form, has quickly attracted widespread attention due to its unique interactivity and immersion. Immersive installation art breaks the boundaries of traditional art by combining advanced digital media technologies such as virtual reality (VR), augmented reality (AR), and multi sensory interaction, providing audiences with a brand new artistic experience.

The application of digital media technology has shifted artistic creation beyond static visual presentation to dynamic and interactive artistic expression. The audience is no longer passive recipients, but active participants in the artistic experience. This interactivity not only enhances the audience's immersion, but also encourages artists to explore more diverse creative techniques and expressions. Therefore, in-depth research on the characteristics of immersive installation art, especially how to build immersion, achieve interactivity, and promote artistic innovation through digital media technology, will help to better understand the unique value and future development direction of this art form.

This study aims to systematically explore the core characteristics of immersive installation art from the perspective of digital media. Firstly, we will analyze the process of constructing immersion and explore how to achieve deep audience immersion through spatial design and multi sensory stimulation. Secondly, the role of interactivity in artistic experience will be examined, and how digital media technology can enhance audience engagement will be studied. Finally, this study will also focus on how digital media promotes innovation in artistic expression, revealing its impact on artistic creation forms and audience experience. Through these explorations, this study aims to provide valuable insights for art creators and researchers, and promote the further development of immersive installation art.

2. Literature review

2.1 The origin and development of immersive installation art

The origin of immersive installation art can be traced back to the avant-garde art movements of the

early 20th century, including Futurism and Expressionism. These movements emphasized the dynamic relationship between the artwork and the audience, laying the foundation for later immersive art [1]. As time passed, artists began to explore how to break traditional artistic boundaries through various sensory stimuli such as space, light, shadow, and sound. The art installations of the 1960s, such as Marcel Duchamp's "Ready Made" and Ellsworth Kelly's color theory, marked the maturity of installation art forms. After entering the 21st century, the development of digital media technology has injected new vitality into immersive installation art, allowing artists to create more complex and immersive works of art through technologies such as virtual reality (VR), augmented reality (AR), and projection mapping. This development trend not only enriches the forms of artistic expression, but also enhances the interactive experience of the audience, making immersive installation art an important component of contemporary art.

2.2 Development of digital media technology

The rapid development of digital media technology has greatly promoted the transformation of artistic creation in the past few decades [2]. Initially, breakthroughs in computer graphics allowed artists to create and manipulate visual elements in digital environments, while the development of network technology enabled art works to be disseminated through online platforms. Subsequently, the emergence of virtual reality (VR) technology provided a new space for artistic creation, where artists could construct immersive environments in virtual spaces. Augmented reality (AR) technology further expands this possibility by overlaying virtual information onto the real world, enhancing the audience's interactive experience. In addition, the application of projection mapping technology enables artists to project complex images and videos onto any surface, further enhancing immersion. The advancement of these digital media technologies not only broadens the boundaries of artistic creation, but also changes the way audiences interact with artworks.

2.3 Characteristics of immersive art

The core feature of immersive art is its ability to provide a comprehensive sensory experience, allowing the audience to fully immerse themselves in the environment of the artwork [3]. Firstly, immersion is achieved through the combination of spatial design and multi sensory stimulation. For example, artists use surround sound, dynamic lighting, and interactive installations to create a captivating art space that makes the audience feel as if they are there. Secondly, interactivity is another important characteristic of immersive art. Audiences are not just passive observers, but participate in artistic experiences through touch, movement, or selection. This interactivity not only enhances the audience's sense of participation, but also enables the artwork to undergo real-time changes based on the audience's behavior. Finally, immersive art promotes innovation in artistic expression, and by combining digital media technology, artists can create unprecedented forms and experiences of art. This innovation in artistic expression not only challenges the boundaries of traditional art, but also provides viewers with unique visual and sensory enjoyment.

3. Analysis of immersive installation art features from the perspective of digital media

In the context of digital media, immersive installation art exhibits many unique features [4]. These features not only enhance the expressiveness of the artwork, but also change the way the audience interacts. The following is a detailed analysis of the characteristics of immersive installation art.

3.1 Building immersion

Immersion is one of the core characteristics of immersive installation art, which refers to the comprehensive sense of participation and immersion that the audience feels in the artistic experience [5]. Digital media technology provides rich means for building immersion, including virtual reality (VR), augmented reality (AR), and projection mapping.

Virtual reality (VR). Through VR technology, artists can create a completely virtual environment, allowing viewers to put on VR helmets as if they were in another world. VR can provide a 360 degree visual experience, coupled with stereo sound effects, enhancing immersion. For example, artists can design complex scenes and dynamic elements in virtual spaces, allowing audiences to interact with the virtual world in all aspects.

Augmented reality (AR). AR technology breaks the boundary between virtuality and reality by overlaying virtual elements on the real environment. Artists can project virtual images and information in the real world, and audiences can see and experience these additional virtual layers through AR devices such as smartphones or AR glasses. AR technology not only enhances visual immersion, but also enables viewers to discover new artistic experiences in familiar environments.

Projection mapping. Projection mapping technology creates dynamic visual effects by projecting light and shadow onto the surface of an object. This technology can transform buildings, indoor spaces, and even natural landscapes into canvases of art, creating realistic immersive effects. Artists can use projection mapping technology to design artworks with variability and interactivity, allowing the audience to feel a strong sense of spatial immersion.

The application of these technologies enables immersive installation art to create unique experiences on a multi sensory level, making the audience feel as if they are fully immersed in the artwork.

3.2 Interactivity and sense of participation

Another notable feature of immersive installation art is its high interactivity and sense of participation [6]. Traditional art works are usually static, and the audience's role is often that of a passive viewer. However, immersive art works enhance the depth and sense of participation of the artistic experience by introducing interactive elements and giving the audience a more active role in participation [7].

Real time feedback, in immersive installation art, the behavior of the audience can directly affect the form of expression of the artwork. For example, the audience's actions, touches, or voice inputs can change visual effects, sound, or environmental settings in real-time. This real-time feedback mechanism not only allows the audience to feel a direct connection with the artwork, but also makes each experience unique.

Personalized experience, many immersive artworks allow viewers to customize the experience based on their personal choices or behaviors. For example, through interactive interfaces or sensors, viewers can choose different paths or plots to influence the presentation of art works. This personalized experience not only enhances the audience's sense of participation, but also enables each viewer to find a unique experience related to themselves in the artwork.

Social interaction, some immersive installation artworks also incorporate elements of social interaction, allowing for collaboration or competition among audiences. For example, art installations can set up interactive scenes for multiple people, allowing the audience to participate in a certain activity or solve problems together. This social interaction not only enriches the artistic experience, but also promotes communication and cooperation among audiences.

The enhancement of interactivity and participation makes the audience not just observers, but an important component of the artwork, greatly enhancing the participation and fun of the artistic experience.

3.3 Artistic expression and technological innovation

Another important feature of immersive installation art is the innovation of artistic expression, which is mainly due to the continuous advancement of digital media technology. Technological innovation provides artists with new tools and platforms, enabling them to explore and achieve unprecedented ways of artistic expression.

Multi sensory experience and digital media technology enable artists to integrate various sensory elements such as visual, auditory, and tactile senses, creating richer and more three-dimensional works of art. For example, through sound sensors and tactile feedback devices, viewers can experience the interaction of touch and hearing, making the expression of art works more multidimensional and vivid.

Dynamic and changing, unlike the static nature of traditional art works, immersive installation art works often have dynamic and changing characteristics. Through program control and real-time data input, art works can adjust their presentation form in real-time based on audience interaction or changes in the environment. This dynamism not only increases the variability of artistic works, but also provides audiences with constantly changing new experiences.

Cross border integration and digital media technology have promoted the integration of art with other fields such as science, game design, and architecture. Artists can draw on technologies and concepts from these fields to create cross-border works of art. For example, artists can apply the principles of game design to immersive art, creating challenging and entertaining interactive experiences. This cross-border integration not only broadens the horizons of artistic creation, but also brings more diverse artistic experiences to the audience.

The innovation of digital media technology enables immersive installation art to break through the boundaries of traditional art, explore new forms of artistic expression and experience, and promote the continuous development and evolution of artistic creation.

4. Future development trends of immersive installation art

Immersive installation art, as a cutting-edge art form, is rapidly developing and attracting increasing attention. In the future, this field will be influenced by various factors, including the application of emerging technologies, cross disciplinary cooperation, and the balance between globalization and localization. The following is an in-depth exploration of these future development trends.

4.1 Potential of emerging technologies

Artificial intelligence (AI) and machine learning (ML) are becoming increasingly important, having a profound impact on the creation and experience of immersive installation art. These technologies enable art works to be generated and adjusted in real-time through algorithms and data-driven methods. AI can analyze a large amount of audience data to adjust the presentation of art installations in real time, such as by adjusting light and shadow effects, sound, interactive elements, etc., to provide personalized experiences for the audience. In addition, AI can also provide creative support in the process of artistic creation, expanding the creative boundaries of artists by generating new visual or auditory elements. Machine learning technology can recognize the behavior patterns of the audience and optimize the interactive experience based on these patterns, thereby achieving a more immersive art display.

In the future, with the continuous advancement of technology, immersive installation art may adopt more advanced technologies such as quantum computing and augmented reality (AR). The powerful computing power of quantum computing can handle more complex datasets, providing higher accuracy and more possibilities for artistic creation. Augmented reality technology can overlay virtual elements in the real world, creating more diverse immersive experiences. In addition, biotechnology may also bring breakthroughs by monitoring the physiological state of the audience (such as heart rate, brainwaves, etc.) to adjust the response of art installations and achieve deep interaction with the audience. The application of these emerging technologies will continue to drive the development of immersive installation art, bringing new artistic creation and viewing experiences.

4.2 Opportunities for cross disciplinary cooperation

The creation of immersive installation art often involves a deep integration of art and technology. Collaboration between artists and technology experts can create more innovative works. For example, collaboration between artists and programmers can transform complex algorithms into visual art effects, giving artistic works higher technological content and expressiveness. Technology companies can provide the latest technological support, such as virtual reality (VR), augmented reality (AR), and interactive technology, which can elevate the interactivity and immersion of art works to a new level. In the future, this cross disciplinary cooperation will become even closer, promoting the integration of art and technology to a higher level and forming innovative forms of artistic expression.

In addition to technology, collaborative innovation in the fields of design and engineering is also a key factor in the future development of immersive installation art. Engineers can provide professional technical support to ensure the structural stability and technical feasibility of art installations, while designers are responsible for the visual and sensory experience of art installations. The cooperation between the two can achieve a perfect combination of design concepts and engineering technology, thus creating both beautiful and practical art installations. For example, through advanced materials and engineering techniques, artists can design more complex and exquisite installations, achieving higher levels of artistic expression. In addition, collaboration between engineers and designers can enhance the sustainability of the installation and develop environmentally friendly and economical solutions, which are crucial for the long-term use and maintenance of art installations.

4.3 Balance between globalization and localization

In the context of globalization, the creation of immersive installation art is no longer limited to the local market, and artists can absorb global art trends and technological innovations [8]. This global perspective enables artistic creation to incorporate a wider range of cultural elements, attracting audiences from different countries and regions. For example, international art exhibitions and cross-border cooperation projects provide a platform for artists to showcase and exchange their creative ideas and artworks with a global audience. Meanwhile, globalization has also prompted artists to explore cross-cultural forms of artistic expression and create globally influential works of art.

Although globalization provides a broad perspective, the localization of immersive installation art is equally important. The integration of local cultural elements can endow artistic works with unique regional characteristics, enabling them to better reflect and inherit local culture. For example, local artists can integrate local history, traditions, and social backgrounds into their creations, showcasing local cultural stories and artistic styles through immersive installations. This localized creation not only helps to protect and promote local culture, but also enables audiences to gain a profound understanding of local culture while appreciating artistic works.

In the future, the development of immersive installation art will continue to be influenced by technological advancements, cross disciplinary collaborations, and a balance between globalization and localization. These factors will drive continuous innovation in immersive installation art, bringing audiences a richer and more profound artistic experience.

5. Conclusion

The research on the characteristics of immersive installation art from the perspective of digital media shows that this art form exhibits unique innovation and development potential in technology, experience, and culture. From a technical perspective, advances in digital media technologies such as virtual reality (VR), augmented reality (AR), and artificial intelligence (AI) provide new tools and methods for creating and experiencing immersive installation art, enabling it to achieve higher levels of interactivity and immersion. At the experiential level, immersive installation art creates immersive artistic experiences through multi sensory stimulation and interactive audience participation, breaking through the traditional way of art display. At the cultural level, this art form can integrate and convey rich cultural connotations, reflecting and influencing the artistic concepts of contemporary society.

Overall, digital media technology has not only driven the development of immersive installation art, but also expanded its forms of expression and viewing experience. In the future, with the continuous advancement of technology and innovation in artistic creation, immersive installation art is expected to play an important role in a wider range of fields, bringing audiences richer and more diverse artistic experiences. Meanwhile, further collaboration between artists and technical experts, cross disciplinary exchanges, and a balance between globalization and localization will be key factors driving the continuous development of this art form.

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