Digital construction of Art Museums Based on Virtual Technology in the Internet Environment

Zijian Pei
Jilin Art Institute, Changchun, Jilin, 130021

Abstract: in the Internet environment, advanced science and technology has become an important force to promote the development of cultural undertakings. In particular, driven by digital technology and virtual technology, art museums can digitize classic works and re present classic art works by using digital technology and virtual technology, which can not only make art culture more flexible and meet the viewing needs of modern people, but also combine modern technology to analyze the connotation of classic works and ensure that art museums keep pace with the times, Enhance the viewer's artistic self-cultivation and aesthetic realm. Based on the internet background, this paper discusses the significance of digital construction of art museums, introduces typical representatives of digital art museums, discusses the path of digital construction of Art Museums Based on virtual technology, and looks forward to the future direction of digital art museums.

Key words: Internet;Virtual technology;Art Museum;Digital construction

1 The significance of digital construction of art museums under the background of Internet

1. build a Digital Art Archive

By accelerating the process of digital construction, the art museum can create a high-quality academic brand image, generate a virtualized and intelligent cultural form, more comprehensively display the exhibition results of the art museum, improve the external dissemination and influence of the art museum, and improve the reputation and browsing of the exhibition. Among them, with the help of the Internet platform and digital technology, the art museum can collect the artist information of the works in its collection, constantly improve and fill the art archives, and create a big data platform for the collection of archives and collections, which is easy to call information data at any time.

2. strengthen public education in Fine Arts

Through the introduction of digital technology and virtual technology, the art museum can innovate the interactive form of public education, which can not only bring the audience a new viewing experience, but also facilitate relevant personnel's access, learning and

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research. Through the innovative use of virtual technology, the art museum can develop interactive games to provide the audience with an environment of free origami, paper cutting and painting, so that they can get the opportunity of free expression and creation, and have an in-depth understanding of various cultural elements. At the same time, by promoting the digital construction, the art museum can introduce virtual human customer service, which can call virtual human customer service at any time as long as the audience wears the virtual device, and has the functions of guided route, interactive query, booth introduction and so on. According to the audience of the art museum, the virtual digital human can timely collect user feedback, reasonably adjust service parameters, provide users with humanized services, and improve the public service level of the art museum.

3. bring the audience an immersive experience

By promoting digital construction, art museums can combine existing resources to develop information management systems and virtual exhibition systems, breaking the restrictions of place, space and time, so that people all over the world can watch the latest works of art. Through the use of virtual technology and 3D display technology, the art museum can create vivid and realistic display scenes, display works from different dimensions, enrich the display content, and enhance the audience's immersion experience, so as to enhance the dissemination and popularity of the art museum. At the same time, with the support of intelligent collection technology and digital virtual technology, the art museum will be able to create a virtual art museum service terminal, so that audiences thousands of miles away can also obtain 3D immersive viewing experience by virtue of virtual technology.

2 Digital construction model of art museum based on Virtual Technology

1.Virtual exhibition hall

With the support of virtual technology, the art museum can launch an online virtual exhibition hall scheme to present art works with the help of a virtual environment. The virtual exhibition hall mainly relies on virtual reality technology, so the specific construction is affected by virtual reality technology. From the perspective of development history, the virtual exhibition hall was initially composed of a single web page image, and then changed to 360 ° stereoscopic photography, and then developed to 3D modeling. At present, 3D modeling technology has been relatively mature, but both mobile and PC terminals lack strong service support. As for the online service of art museum based on Web browsing, 3D technology is difficult to obtain good display effect in web browser. Therefore, considering the reality and technology, although 360 ° stereo photography is not the most advanced technology, it is highly practical and has great popularization significance. 360 ° stereoscopic photography requires personnel to take photos from different angles in the same exhibition hall, and then use digital mosaic technology to synthesize an image that supports up, down, left and right rotation. With this technology, the art museum can use limited data to restore the exhibition content.

2.Mobile client

Usually, the communication between the audience and the works stays during the exhibition. Limited by viewing location, it is difficult for some visitors to get a good experience. With the support of digital and virtual technology, the art museum can develop an app that supports mobile client functions and introduce two-dimensional code technology, so that the audience can watch the exhibition at any time without leaving any regrets. In a series of exhibition activities, the audience can use the mobile client to scan the QR code of the works or poster cover to obtain the relevant information of the exhibition works. Even if they fail to get the opportunity to watch, they can also enjoy the art in other places. In China, visiting art museums is an elegant art leisure activity, which is very grand for the general public. With the help of APP platform, the art museum can use two-dimensional code and virtual technology to integrate excellent designs and art works into the "handheld Art Museum", so as to better play the service function of the art museum.

3.Virtual exhibits

In recent years, with the development of Internet technology and equipment, the concept of virtual exhibits came into being. In the past, limited by hardware conditions, virtual facilities could not perfectly display the image of works. Currently, with the support of virtual technology equipment, the art museum can introduce virtual simulation equipment and touch screen facilities to show the artists' traditional Chinese painting works, and support the audience to understand the basic information of the works and touch interaction. Compared with the original works, the virtual exhibits have unique characteristics, which can not only accommodate the latest research results, but also contain a large amount of information, showing the rich expression connotation of the virtual digital picture.

3 Digital construction path of art museum based on Virtual Technology

1.Museum Guide

With the support of VR and AR technology, the art museum can build a navigation system based on visual positioning to support users to obtain navigation routes according to the actual situation. According to the needs of different users, the art museum can set diversified navigation routes. In the specific navigation process, according to the real space nodes, personnel should set important display signs by video, text or audio, and match with node coordinates and guide arrows, so that users can clearly understand the visiting points in different directions. Compared with the traditional plane navigation system, the navigation system based on vr/ar is more three-dimensional, convenient for users to understand emergency exits, stores and public service facilities, and brings people an in-depth tour experience. According to the virtual navigation system provided by the art museum, visitors can use the software to log in, view the contents of the list page, select the destinations they are interested in, and find the most convenient path with the help of navigation. At the same time, in the process of using the navigation roaming system, the audience can also check the derivatives store at any time, understand the basic products

of the store, and achieve the effect of virtual experience without entering the store.

2. interaction of exhibition scenes

Inside the art venue, personnel can use VR and AR technology to reasonably add various virtual objects. After reaching the area with virtual objects, the audience can trigger the preset animation effects, watch the animation content directly using handheld devices, and interact with virtual exhibits using handheld devices and virtual gestures. In the virtual interactive scene, the art museum can integrate the virtual scene and tourist experience, show the charm of different exhibits in a rich and colorful way, so that more tourists can enter the virtual cultural relics and make the exhibits live.

3.Photo interactive experience

In addition to personalized virtual interactive activities, the art museum can use digital technology and virtual technology to set up virtual and real special effects scenes according to the needs of the audience. Users need to carry handheld devices, enter specific trigger areas, take photos or take short videos to integrate real exhibits with virtual special effects, and record the specific moments of tourists.

4.Any door

In the case of changing the layout of the current venues, by combining virtual reality and augmented reality technology, the art museum can superimpose virtual elements according to the existing materials in the venues, and it can trigger any door mechanism as long as tourists reach the established position. With the help of handheld devices, tourists can capture the area where any door is located, step through any door, and watch the pre-set virtual scene. By using any door, the art museum can provide visitors with various types of virtual scenes to create a certain sense of passing through and enhance the sense of artistic experience. In the design of any door, people can design paintings or antique style doors according to the theme of nearby works to create an antique flavor.

5.pass through

If only viewing and appreciating paintings, the audience will inevitably feel bored. In this regard, the art museum can add a variety of virtual experiences and interactive props to let the audience experience the fun of interaction, shoot short videos and upload them to the network, so as to better attract the attention of other audiences and enhance the popularity of the art museum. Taking vr/ar through interaction as an example, the art museum can use the equipment with camera function to keep the screen static before the audience reaches the trigger point. Once the camera scans the face, the scenic spots related to cultural relics will appear on the screen, and the audience can make different actions to make the screen change. In such a cross-cultural interaction, the audience can experience some cultural fun.

6.VR multi dimensional space drawing

Innovation is the core element of VR multi-dimensional space drawing. In the design of traditional works of art, the creator keeps inspiration in his mind or on paper. The VR multi-dimensional space drawing creation tool has the functions of picture layering and graffiti editing. After a simple study, painters can transform their imagination into a 3D work of art. In vr virtual design, painters can modify and adjust freely, and can also use 3D printing equipment to make excellent handicrafts.

4 Digital construction direction of future art museums

1. 3D based digital management system

With the support of 3d background digital management system, the art museum can extend from the physical exhibition to the virtual exhibition space, and reasonably explore the virtual exhibition mode. This can not only break the restrictions of fixed venues, but also interact and talk with the audience by means of virtualization and digitization, promote art to the public and society, and improve the coverage of elegant art. In this way, 3D digital exhibition can also be used to preserve the exhibitions that cannot be carried by the physical museum.

2. exhibition arrangement based on 3D virtual

Under the 3d/vr virtual display system, the art museum can reasonably collect digital exhibition data, summarize relevant data and charts, further understand users' concerns and users' favorite functions, and enhance online and offline interaction. By strengthening online and offline communication, the art museum can continuously improve the user experience and upgrade the 3D virtual experience in combination with user feedback.

3. social exhibition based on Virtual Exhibition

Based on VR application equipment and live broadcast software, the art museum provides art exhibitions for the world, and introduces an immersive interactive viewing mode, which fully integrates virtual technology and art, and gives the audience a strong sense of humanistic experience.

4. art exhibition based on virtual interaction

Based on the virtual navigation system, the art museum can use the data acquisition and modeling functions to combine the spatio-temporal data models under different weather and time conditions. In this way, tourists only need to log in to the mobile terminal device and upload the environment scanned by the camera to the cloud, and the system can quickly match the corresponding spatial modeling information with the algorithm to provide the best posture and perspective for tourists. Coupled with the AR interactive function, visitors can have a unique interactive experience with the art museum.

5. 3D distribution based on Intelligent Matching

By using 3D virtual technology, the art museum can digitize the crowd, exhibits and behaviors, accurately analyze the characteristics of the relationship between the exhibit area and the user population, fit the distribution trajectory of people of different ages and genders, and

improve the rationality of layout design. On the one hand, the art museum can understand the number of visitors, length of stay, and relevant age and gender distribution characteristics of works of art with different themes. Second, integrate different audiences' hobbies, reasonably design the flow route of visitors, and help different audiences find their favorite theme stores.

6.Digital security application scenarios

The use of digital early warning and security means to timely detect inappropriate acts of human contact and destruction of exhibits. For the situation discovered at the time, video backtracking should be used to quickly lock the relevant personnel; According to the flow and gathering of people, the art museum can use digital means to reasonably guide the crowd and prevent the crowd from breaking into the collection area and sensitive areas.

To sum up, the core of the latest generation of information technology is still the Internet. Therefore, in the process of promoting digital construction, art museums should pay attention to the introduction and upgrading of Internet equipment. Through the comprehensive use of digital technology, virtual reality technology and augmented reality technology, information, goods and human society will be linked to build a digital and virtual ubiquitous network, so as to enhance the public education, research and collection functions of art museums, Better serve for art information publicity.

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About the author: peizijian (July, 1998), male, Han nationality, Changchun City, Jilin Province, master's degree, applied research on art museum management.

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