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Research Article

Application of Animation Control Technology Based on Internet Technology in Digital Media Art

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The advent of the Internet era has endowed artistic creation with new forms and connotations, and more and more digital media technologies have entered the stage of artistic creation and exhibition. At the same time, Internet technology has also provided more abundant artistic resources and art forms for digital media art for reference. With the development of animation control technology, various character animations present three-dimensional visual effects. Digital media art has emerged as a new concept in the field of multimedia applications and the integration and development of various technologies such as intelligent technology, network technology, media technology, and art design. This makes the art present a three-dimensional beauty with the support of modern high-tech technology. This paper mainly discusses the application of animation control technology in digital media art under the support of Internet technology. This paper also studies the artistic effect of digital media art under animation control technology. Through experimental research, this paper shows that the application of animation control technology in digital media art can improve the vividness of animation characters and promote the integration of digital media technology and culture and art. The fidelity to its simulated reality reaches 98.99%, and the actual effect achieved in the process of digital media art design work is completed, thereby realizing a large number of character animation scenes.

1. Introduction

With the application of multimedia and the rapid development of the cultural industry market, the application of the digital media industry was born. The rapid development of the digital media industry stems from the in-depth research and development and application of digital technology. It includes the continuous research and development, breakthrough and mutual integration of digital technology, computer technology, and media products [1]. And computer technology and media are deeply combined to form digital media technology. The development of two-dimensional and three-dimensional technologies has broken through the limitations of traditional art in space and time. This allows art to be varied and displayed differently in time and space, diversifying the expression of art, and it is the general trend to combine digital media technology with art. And the development of Internet technology has also promoted the progress of animation control technology. The use of animation control technology in digital media art makes character animation more vivid, as we have seen with special effects. It is precisely because of the application of animation control technology in digital media art that digital media art has gradually become a way of life entertainment for the public [2]. Although animation control techniques have been applied to digital media art, there are still many unknown areas. Therefore, the application research of animation control technology in digital media art is still a research hotspot.

This paper mainly has the following innovations in the application research of animation control technology in digital media art: (1) On the basis of Internet technology, it discusses the specific application of animation control technology in digital media art. And it understands the role of animation control technology on the development of digital media art. (2) Internet technology collects human movements and applies them to 3D modeling. It then constructs the basic image of the animated character in three

dimensions through the animation control technology and uses the animation control technology to control the action of the character animation. (3) The traditional animation design technology and the deformer in the animation control technology can more quickly and efficiently design the changes of every action and expression of the character and improve the efficiency of art creation.

2. Related Work

To this end, many scholars have conducted in-depth research on digital media. Among them, Kong constructed a new visual formal language according to the development of digital media art. He proposed that the emergence of digital media makes users have a positive attitude towards web TV interface style design and animation production. And he showed through experiments that the main qualitative evaluation results were positive. If digital media art can be improved in terms of personalization, it will obviously help to improve the overall experience of the interface [3]. In view of the development of digital media technology, Qian proposed that architectural animation can better restore the real scenes inside and outside the building, with certain visibility. By analyzing the visualization and application of architectural animation, he identified where the market did not fit. He makes continuous improvements and introduction of new technologies to make society better [4]. Teng discussed the application of computer digital technology in 2D animation design. He analyzed the difference between 2D animation and 3D animation, the advantages of 2D animation digital technology, and its core production process, related technologies, art, and applications. Experimental results showed that this method can improve the overall performance of the system [5]. Liu et al. discussed the technical principle of holographic projection technology and its application in the field of digital media art. They understood the technical principle of holographic projection and its application status in various fields, especially in the field of digital media art. He also introduced the application of digital holography technology, virtual imaging technology, and computer simulation technology in the realization of holographic projection technology [6]. However, Kong's research lacked a specific experimental design, and the experimental results are not convincing. Qian's research lacked concrete examples to demonstrate that the social needs of architectural animation are better. Teng's research failed to compare 3D animation with 2D animation. Liu et al. did not conduct experimental demonstration.

The research on animation control technology can promote the richness of 3D animation design. It diversifies the form of 3D animation and makes the content more exciting. This attracts the attention of the public and promotes the development of the digital media industry. Its application of animation control technology to digital media art can improve the production efficiency and production effect of animation. At the same time, it realizes the production of a large number of character animation scenes, promotes the spread of culture, and enriches the spiritual and cultural life of the public. It can solve the disadvantages of manual control of animation, realize the view operation of three-dimensional animation in multimedia, and promote the development of digital media art. At the same time, with the help of Internet technology, animation control technology can make the modeling of characters more realistic. This makes the created works of art closer to real life, so that the public can experience digital media art immersive.

3. The Application Method of Animation Control Technology in Digital Media Art

3.1. Animation Control Technology under Internet Technology. With the development of advanced computer vision technologies such as augmented reality, virtual reality, and motion capture, the application scope of animation control technology is becoming wider and wider. It plays a great role in interactive display of architectural scenes, urban virtual planning, industrial product display, character animation, and other fields. It takes motion capture technology as the core, and actors drive 3D virtual characters to perform actions in real time. It became popular by documenting the way character animation was produced for generative animation [7]. With its wide application in animation production, film and television special effects, somatosensory interaction, and other fields, the technology of motion capture and real-time character animation has made great progress [8]. And Internet technology can collect all kinds of works of art and real-life scenes. It allows creators to get more inspiration through Internet technology. And the application of Internet technology in digital media art has promoted the diversification of modern animation design. This has played a role in promoting animation control technology for digital media. It can collect a large number of original materials as samples through Internet technology. It makes character animation more vivid through animation design. The first step in the production of character animation is to collect similar movements made by the human body in reality. It then conducts 3D animation modeling through Internet technology, as shown in Figure 1.

In the process of character animation production, it is first necessary to collect the movements of the animated characters. When the human body performs related actions, it emits infrared rays through the sensing device to perceive the human body action and record it in the storage device [9]. Then, it models the collected actions in 3D and uses animation control technology to design the animation characters. It shows every action of the animated character through animation control technology. To transmit its senses and collect human movements, it is necessary to analyze the movements of the human body. Only then can the animation design be modeled and the human show the action. It shoots with a camera and decomposes the action in the picture for 3D modeling. Then, the picture and the 3D modeling have a mutual relationship, which we call the mutual information (MI) relationship. It is assumed that in the three-dimensional coordinate diagram, the elbow P coordinate of the arm swing action of the human body is (x, y, z), and the corresponding elbow coordinate $P1$ in the three-dimensional modeling is (x_1, y_1, z_1). Then, the

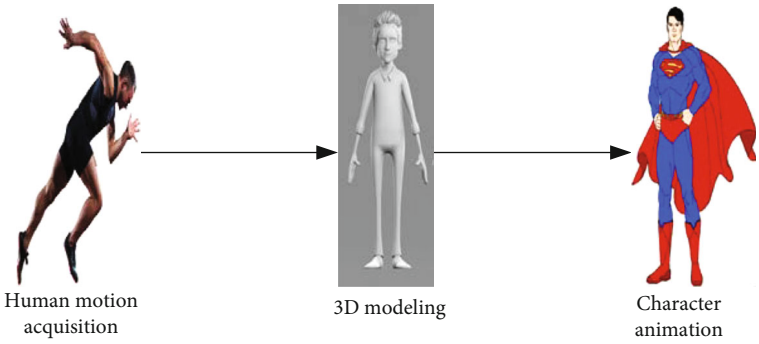


Figure 1: Character animation production process.

calculation of the degree of association U between a certain feature r in the 3D modeling process and a certain category of feature A in the picture is as follows:

$$U = \frac{A(x_1 * y - x * y_1)}{t * z * z_1}. \tag{1}$$

Then, the calculation formula of the mutual information method is as follows:

$$\mathrm{MI}(r, A) = \log \frac{(A_1/r)}{p(r) * p(A_1)} * \varpi, \tag{2}$$

$$\mathrm{MI}(r, A) = \log \frac{x^* A_1 + y^* A_1 + z * A_1}{x_1{}^* r + y_1{}^* r + Z_1{}^* r} * \theta. \tag{3}$$

In the above formula, p represents the probability that a feature appears in the modeling image or the original image. And ϖ and θ are two matrices, respectively, and their form is as follows:

$$\varpi = \begin{bmatrix} x_1 & y & z_1 \\ z & y_1 & x \end{bmatrix}, \tag{4}$$

$$\theta = \begin{bmatrix} r & U \\ A & P \end{bmatrix}. \tag{5}$$

The clarity of the 3D modeling also depends on the clarity of the picture. In order to extract clear human movements, it is necessary to use sensing technology and communication technology to accurately analyze the human movements and transmissions in the picture, as shown in Figure 2.

As shown in Figure 2, sensing technology needs to extract key points of actions in the human body. First of all, it is necessary to ensure the clarity of human movements in the original picture before they can be accurately identified. Among them, the calculation method of the resolution S of the picture is as follows:

$$S = G * H. \tag{6}$$

Among them, G represents the number of horizontal pixels of the picture and H represents the number of vertical pixels of the picture. In the collection of animation character actions, the image resolution is based on vector graphics, which means that the original image of the cartoon belongs to the category of vector graphics. But after the transformation of animation control technology, it has become a bitmap like other films. Sensing technology has a strong correlation with the recognized picture and the original picture. This assumes that the three-dimensional coordinates of the key points in the original image extracted by the sensing technology are (s, t, v), and the corresponding two-dimensional coordinates in the recognized action pictures are $(s1, t1)$. The corresponding three-dimensional coordinates in the 3D modeling built by the animation control technology are $(s2, t2, v2)$. Then, the key points selected by the sensing technology in the original image need to be calculated by the algorithm of the characteristic frequency, and the number of key points is used as the value of the characteristic points. Then, the calculation of eigenfrequency TF is as follows:

$$TF = xp + gp. \tag{7}$$

Among them, xp represents the frequency of the feature points contained in the current class picture and gp represents the frequency of the feature points contained in the noncurrent class picture. Then, the calculation formula of the mutual information relationship between the action key points collected in 2D and the features in the original image is as follows:

$$\mathrm{MI} = \log \frac{TF(xp/s)}{TF(gp/v)} * \varphi, \tag{8}$$

where φ is a parallel matrix. Its form is as follows:

$$\varphi = \begin{Bmatrix} s_1 \\ t_1 \end{Bmatrix}. \tag{9}$$

The formula for the mutual information relationship between the feature extraction points in the two-dimensional image and the corresponding feature points in the 3D modeling through animation control technology is as follows:

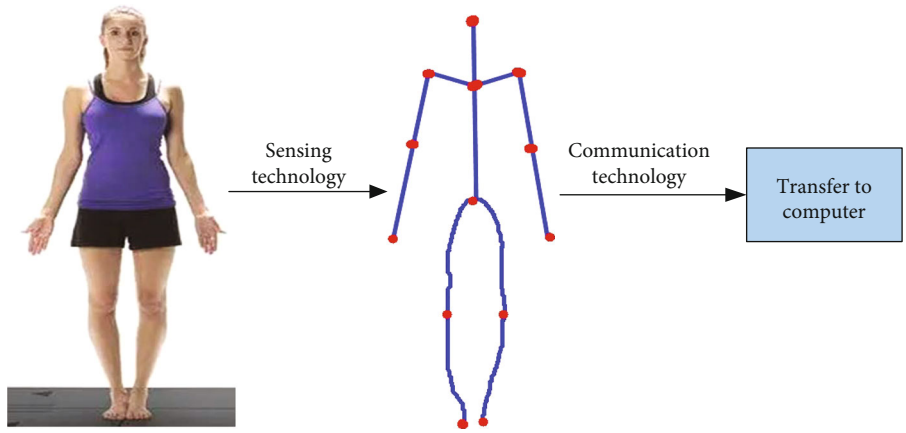


Figure 2: Applications of sensing technology and communication technology.

$$\mathrm{MI} = \log \frac{TF(xp + gp)}{TF(s_1 - s_2) * (t_1 - t_2) * v}. \tag{10}$$

The feature points in the original image and the mutual information relationship in the 3D modeling are expressed as follows:

$$\mathrm{MI} = \log \frac{TF[(xp/s) + (xp/s_1)]}{TF[(gp/t) + (gp/t_1)]} * \mu, \tag{11}$$

where μ is a matrix of the form:

$$\mu = \begin{bmatrix} \frac{xp}{v} & \frac{S}{gp} & v_2 \end{bmatrix}, \tag{12}$$

where S is the picture resolution mentioned above. After the 3D modeling, the 3D pictures can be used for the external image design of the character animation through the animation control technology, so that the animated characters are more plump. The relationship between the established animation image and the original image is as follows:

$$R = \mathrm{MI} * (xp + gp) * S. \tag{13}$$

After the image is established, it is necessary to collect different animation movements through communication technology for comprehensive design, which cannot be similar to the previous animation movements. Therefore, innovation is needed to make the characters of the character animation more novel to attract the attention of the public. The correlation between animation actions is used to describe the connection between actions. It is divided into cross-correlation and autocorrelation, and the correlation in target tracking refers to cross-correlation. Correlation refers to the relationship between the designed character actions and the actions shown in previous characters. The autocorrelation is to refer to other animated characters and still retain the relevance of the action of the designed character. This assumes that there are two signals in communication technology, h and k; then, h is a continuous signal and k is a discrete signal. The correlation between the two is calculated as follows:

$$(h \otimes k) = \int t * R * \frac{xp}{gp} * \vartheta. \tag{14}$$

Among them, t is the time of signal transmission, ϑ is a correlation matrix, and its form is as follows:

$$\vartheta = \begin{bmatrix} \frac{s}{j} & t & v \end{bmatrix}. \tag{15}$$

In formula (15), j represents the transmission speed of the communication signal. Then, the relationship E between the original picture and the generated animation character image can be expressed as

$$E = \mathrm{MI} \oplus TF \otimes S. \tag{16}$$

The animation control technology under the Internet technology can enrich the content of character animation. Because a large number of original materials can be obtained through the Internet and to a certain extent, it can help the generation of animated characters. It can also help the animation control technology to set the animation plot and action to be more exciting.

3.2. Digital Media Arts. From a disciplinary point of view, digital media art belongs to a typical comprehensive interdisciplinary discipline that spans natural sciences, social sciences, and humanities [10], as shown in Figure 3.

In Figure 3, digital media art involves many disciplines. It includes research on the application field of digital media art, research on the history of digital media art, new media art nationality research, digital media art ontology research, digital media art method research, computer application technology research, computer software and theory, film studies, design art, art, linguistics, and semiotics. It is a discipline that can reflect artistic concepts, humanistic concepts, and scientific concepts. It involves not only computer technology but also artistic ideas. It is

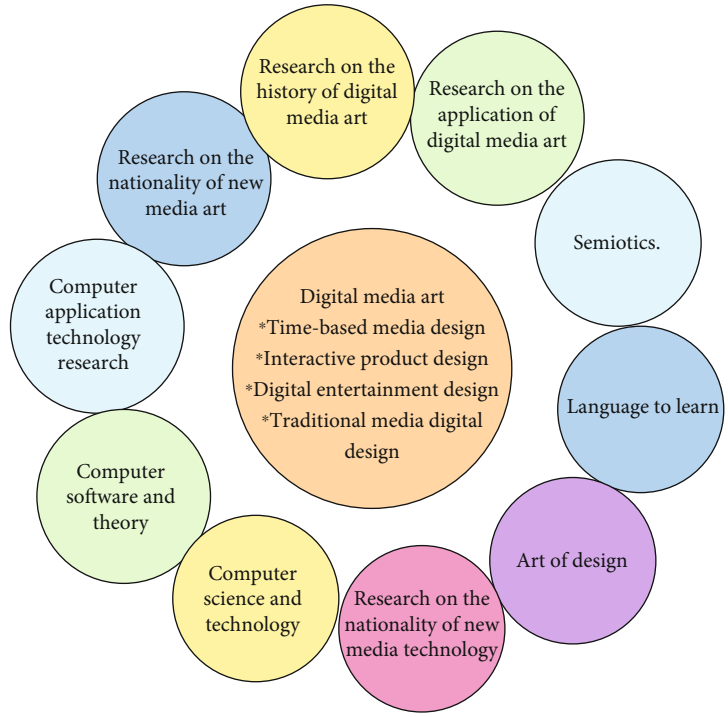


Figure 3: Digital media art.

contemporary mathematical art that relies on digital media and faces mass culture. Compared with traditional art, digital media art is more high-tech and richer in content and expression [11]. Digital media art can be said that traditional art is a work of art processed or generated by digital media technology, such as today's 3D movies, digital music, and digital animation. Works produced are based on digital media technology and digital media platform and have their own unique artistic language and artistic style, such as network multimedia art, digital game art, and virtual reality art [12].

Digital media art relies on modern high-tech technology. One of them is virtual reality technology, which can simulate the environment in reality and bring the public an immersive feeling. This is like the current 3D cinema, as shown in Figure 4.

As a kind of digital media art, virtual reality art can use computers to simulate a three-dimensional virtual world. It integrates the artist's artistic ideas and artistic concepts, so that the public can truly feel the beauty of art [13]. Visual elements of digital media art also include digital animation. Compared with traditional animation, the production of digital animation relies on a lot of high-tech technologies, such as computer technology and Internet technology. The recording process of digital animation is more efficient and three-dimensional. And the expressive power of 3D animation is stronger, and the artistic rendering is more vivid.

The interactive and participatory nature of digital multimedia art has changed the way of unilateral communication in traditional art. It can make the public feel the art more intuitively and deeply understand the art in the interaction. Just like 3D animation, it can let children feel the animated characters more intuitively. It is not like traditional animation, which can only be watched but cannot really feel the feelings of animated characters. Therefore, digital multimedia art provides the public with a new way of artistic experience, narrowing the distance between the public and art [14]. And digital media art is more technical than traditional art. Because digital media art needs the help of computer technology, art creators need to master computer technology and other science and technology proficiently in order to make their own creations innovative. At the same time, it can also make changes to the completed works with the help of various digital technologies, so that the created works of art are more in line with the real material world. It can also be recreated or transformed through digital simulacrum or subjectively based on the original material according to the creator's intention. Therefore, digital media art is more editable and reproducible than traditional art.

In addition, the development of the Internet has enabled digital media art to have a wider range of visual expression themes, because digital media art not only absorbs the form and language of traditional art but loses. It has also obtained richer creative resources through the Internet, promoting its diversification and popularization. Digital media art breaks the concept of time and space and can fully reflect the changes of time and space. It breaks through the tradition of management, coloring, and shaping in two-dimensional space, so that the visual effect of art in multidimensional space can be extended infinitely [15]. The development of digital media art promotes the development of art, improves the public's understanding and love of art, and makes art closer to life.

3.3. Digital Media Animation Control Technology. Digital media animation control technology is a new animation

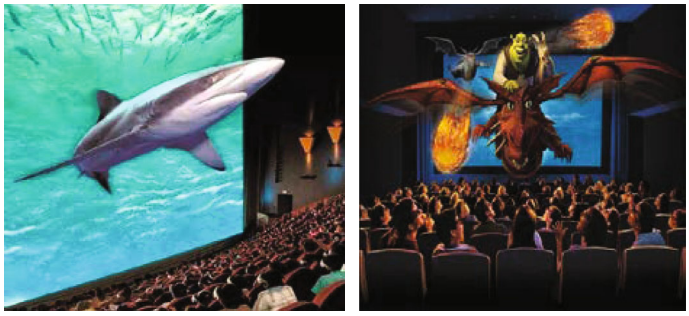


Figure 4: Application of virtual reality technology.

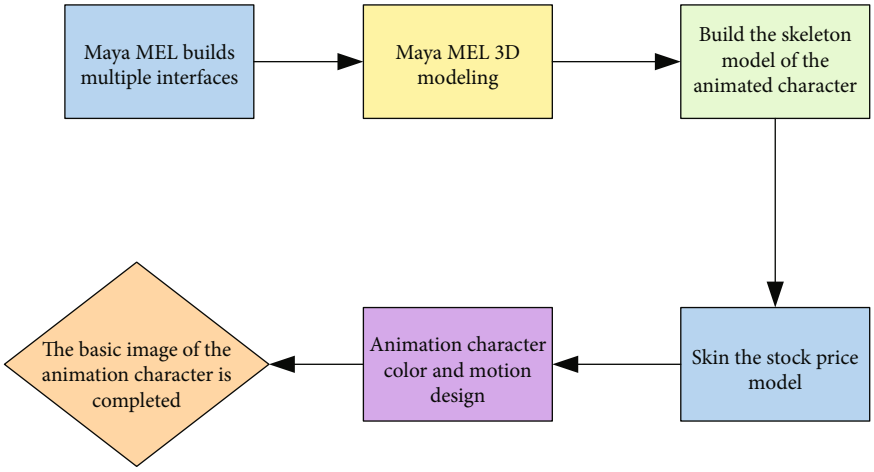


Figure 5: Flowchart of animation character design.

production technology. It is the product of the fusion of digital media technology and animation design and is the sublimation of traditional animation design technology [16]. Its most unique feature is its advanced nature and technology. Through the rational application of technology in animation production, more excellent animation works can be produced to meet the animation needs of more people. In the production process of character animation, it requires the help of the Maya MEL language. The Maya MEL language is a powerful command and scripting language. It gives people direct control over the characteristics, design process, and flow of an animated character. It combines Maya MEL language and animation control technology to make animation production that is more in line with public aesthetics. It not only needs to conform to the public aesthetics but also needs to analyze the users to clarify the most suitable audience and experience goals for each work [17]. For the production of character animation, the animation character needs to be modeled first. It can use Maya MEL language to build three-dimensional animation models and can use Maya MEL language to develop multiple animation character design interfaces. It can simultaneously design different actions of the same character at the same time. The animation character design process is shown in Figure 5.

The colors of the same character can be designed synchronously through multiple interfaces established by the Maya MEL language. It no longer has to repeat the color design of the same character like traditional art, which can greatly improve the efficiency of character construction, because animation production requires vivid images [18]. Therefore, the introduction of Internet technology into animation control technology can well grasp the correspondence between time and space. And computer technology has high accuracy for data calculation, which can make the animation control of each character more accurate.

Because the movements of animated characters are diverse, for example, a character will have arm movements, movements when climbing stairs, and changes in facial expressions, all of which need to be animated. However, to design these actions as the actions in the display scene, it is necessary to rely on the digital media animation control technology based on the MayaMEL language. This technology can realistically simulate real movements and simplifies complex operations. Compared with the Maya modeling technology that does not use the MEL language, it has a more obvious realization effect [19]. The use of computer technology in animation control technology can well wrap the character's skeleton modeling and design colors. This makes the character more alive, as shown in Figure 6.

At present, animation control technology is more widely used in digital media art. It can not only be used to make 3D animation but also be used in advertising production and games. For example, the Camaro, the model of the Bumblebee, advertises for the car brand Chevrolet, which can make people experience the effect of science fiction [20]. With the help of animation control technology, digital media art

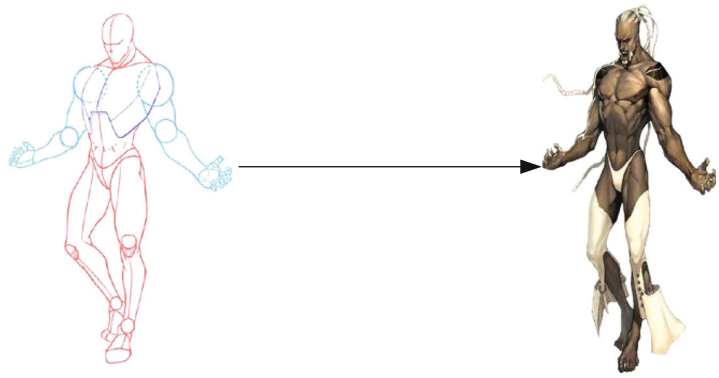


Figure 6: One of the applications of animation control technology.

Table 1: Contents of deformer involves.

Cluster	The weights of clusters have a great influence on model fixed points
Lattice	Fixed-point editing models start at the object level
Blend shape	A variety of deformation effects are applied to the model simultaneously
Bend	The model is bent and deformed, and the angle and position are determined
Flare	Compress or stretch the model
Sine	The model is processed according to the shape of sinusoidal curve
Squash	Changing scale and squash values deform objects
Twist	Distort or screw the model
Wave	To simulate the effect of water wave, the model is treated with water wave deformation

creates more colorful art. It is also more in line with the public's aesthetics and can also allow the public to have a more authentic experience of art.

4. Experiment and Analysis of Animation Control Technology Application

4.1. Experimental Analysis of Animation Character Design. In this experiment, the body movements designed by animation control technology for animation characters and the body movements designed by animation characters in two-dimensional animation are compared. It is then compared with the body movements made by people in real scenes to compare the degree of simulation of animation control technology and character design in 2D animation. First of all, it is necessary to understand the content of the deformer in the animation control technology, as shown in Table 1.

Deformer is a control software in animation control technology. Under the coordination of multiple deformers, the facial expressions and actions of the character can be shaped to make the character look more alive. With deformers, it can greatly improve the animation control technology, as well as the efficiency of character animation design and the accuracy of all aspects of character body changes. The human actions required to simulate the animation characters of this experiment are shown in Figure 7.

The specific data of the four actions in Figure 7 are shown in Table 2.

We use animation control technology and two-dimensional animation technology to simulate the four human bodies, respectively, and make statistics and comparison of the data. The data comparison between the body inclination angle and the distance between the legs is shown in Figure 8.

Looking at the body inclination angle of each action from Figure 8(a), the body inclination angle using animation control technology is obviously closer to the standard data. The error is between 2 and 3 degrees, while the error of this angle simulated by 2D animation technology is between 5 and 6 degrees. The distance between the legs of the four movements is compared in Figure 8(b). The distance simulated by the 2D animation technology is too different from the standard distance, and the animation control technology will be more accurate.

The data comparison of the arm swing distance is shown in Figure 9.

Compared with the standard data, the distance simulated by the two-dimensional animation technology will have an error of 7-8 cm, while the error of the animation control technology is kept between 2 and 4 cm. Judging from the arm swing distances recorded in Figures 9(a) and 9(b), the advantage of the human motion simulated by the 2D animation technology will exceed the standard data. An example is the third action in Figure 9(a) and the first action in Figure 9(b), so it can be concluded that the error of simulating human action with two-dimensional animation technology is still relatively large.

The experiments also recorded the time for the construction of these four actions for both techniques. The experiment also measured the fidelity of animation characters constructed by animation control technology and 2D animation technology. The result is shown in Figure 10.

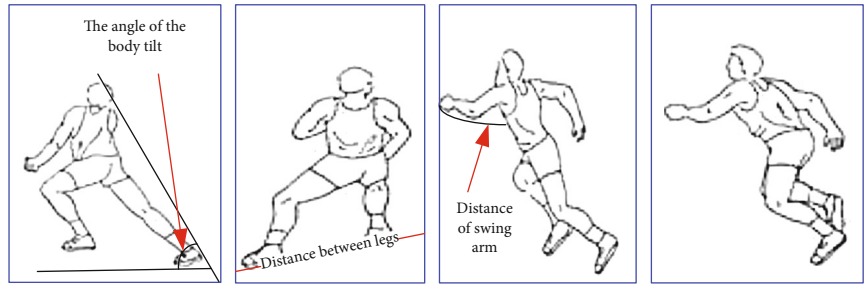


Figure 7: Human actions.

Table 2: Specific data for the four actions.

Action	1	2	3	4
Angle (A)	45	85	55	40
Distance between legs (D)	24.56	40	16.56	10
Left-hand swing arm distance (LA)	10.54	5.45	35.56	40.45
Right-hand swing arm distance (RA)	4.56	3.45	14.45	9.56

In Figure 10(a), it can be seen that the efficiency of animation control technology for human motion simulation is obviously higher than that of two-dimensional animation technology. And from Figure 10(b), the fidelity of the simulation of human movements is also higher than that of the two-dimensional animation technology, and the fidelity of the simulation can reach 98.99%. Therefore, the animation control technology is more efficient in simulating human movements and has a higher degree of fidelity.

4.2. The Application Effect of Animation Control Technology in Digital Media Art. Because of the application of animation control technology in digital media art, many works of art are more colorful. So, the experiment is to play a movie in a different theater in one theater. One is 3D theater playback, and the other is 2D theater playback. It then counted the number of movie tickets sold, as well as interviewing 500 viewers. The experiment observes the public's reaction to the application of animation control techniques to digital media. The statistical results are shown in Table 3.

From Table 3, it can be seen that most of the groups still prefer movie tickets in 3D cinemas. Although the ticket price is higher than that of 2D theaters, the sales volume of movie tickets is still higher than that of 2D theaters. And the experiment can be seen through interviews that 70% of the groups support the use of animation control technology in digital media art. At that time, a small number of groups maintained a neutral attitude, so the effect of applying animation control technology to digital media art was quite good.

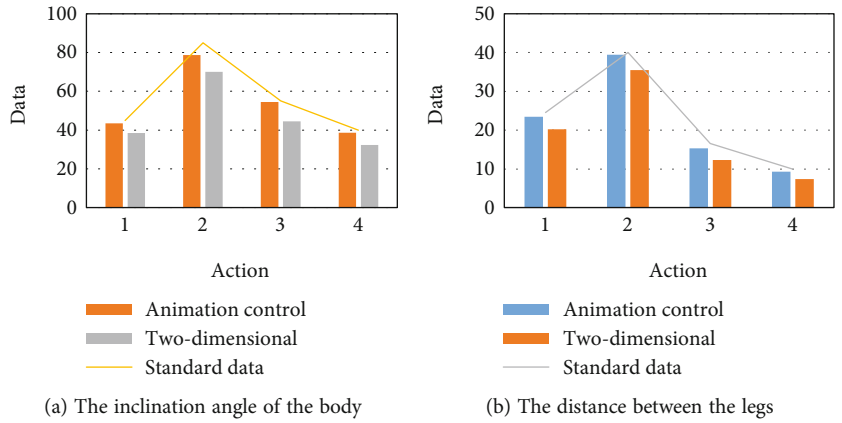
4.3. Experimental Summary. The above experiments show that the application of animation control technology to the development of digital media art has high practicability. Compared with the previous animation technology, the animation control technology is more vivid in the shaping of animation characters. Because the fidelity of its simulation of human movements can reach 98.99%, it can better allow the public to experience the charm of art. And digital media art itself is a product of high-tech development, and the artistic effect it brings is better than traditional art, and it is more popular among the public. Its application of animation control technology to digital media art has been supported by most groups, and the development trend is upward.

5. Discussion

This paper firstly expounds on the animation control technology under the Internet. With the support of Internet technology, animation control technology can recognize human actions and various scenes through sensing devices. And it uses the human motion and scene data perceived in the sensing device as the basis for better 3D modeling. Internet technology can collect more original materials in the network. This provides more abundant artistic reference resources for digital media art. And it can effectively combine the spirit and concept of traditional art to promote the continuous innovation of digital media art. It does not stick to existing art resources and can open up creators' horizons and promote the production of more digital media art works.

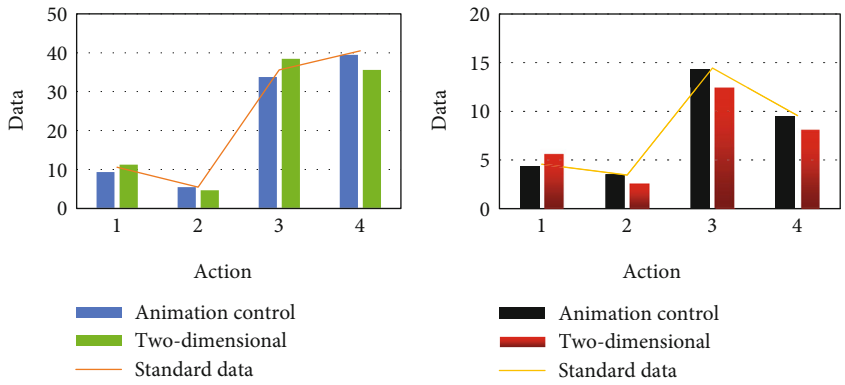
And digital media art itself relies on high technology to create works of art. It integrates computer technology and various fine arts and requires extremely high basic quality of creators. It requires creators to have computer skills, as well as to understand various symbolic languages and various art-related concepts. Digital media art is an interdisciplinary subject, and the creation of digital art needs to reflect scientific and technological concepts, humanistic concepts, and artistic ideas. Although the difficulty factor of his works is relatively high, it can bring a practical artistic experience to the public, which can be liked and followed by the public, and its development prospects are also very good.

This paper shows through experiments that it is found that the application of animation control technology in digital media art can effectively improve the fidelity of the characters in the works and is closer to real life. In particular, the deformer in the animation control technology can coordinate the changes of the character's facial expressions and body movements, which greatly improves the efficiency of character design. Of course, animation control technology can not only be used in the construction of animated characters but also be used for the scene arrangement of the work,



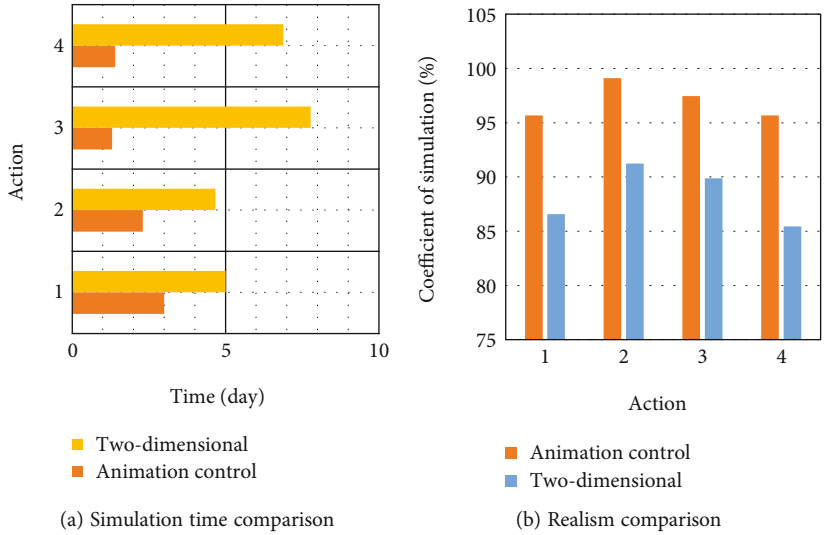
(a) The inclination angle of the body (b) The distance between the legs

Figure 8: Data comparison of body inclination angle and leg distance.



(a) Left arm swing arm distance (b) Right arm swing arm distance

Figure 9: Comparison of the distance data of the two-arm swing arm.



(a) Simulation time comparison (b) Realism comparison

Figure 10: Comparison chart.

Table 3: Statistical results.

	The number of movie tickets sold	Reaction to animation control technology
2D screens	120	—
3D screens	345	—
Supported coefficient	—	70%
Coefficient of opposition	—	—
A neutral attitude	—	30%

making the whole work closer to the real-life scene. At the same time, it can also better promote the public's sense of experience of art works, make art works more acceptable to the public, and shorten the distance between art works and the masses.

6. Conclusion

This paper explores the application of animation control technology in digital media art. Under the background of Internet technology, it can obtain more colorful artistic creation resources through the Internet. At the same time, its animation control technology under Internet technology can obtain more accurate data to build 3D models. Applying it to digital media art can even promote design in digital media art. This makes the designed characters and various scenes more in line with real-life scenes. Through experiments, this paper shows that the animation control technology can achieve 98.99% realistic simulation of the characters modeled and constructed by animation control technology. The deformers included in it can show the facial expressions of the characters and the corresponding limb changes of various action devices in a very realistic way. This makes the characters come alive and lively. The research on the application of animation control technology in digital media in this paper has high practicability and can promote the development of art. However, the research on the application of Internet technology in animation control technology is not specific enough. The author hopes that in future research, the research on Internet technology and animation control technology can be carried out in depth, so as to promote the long-term development of digital media art.

Data Availability

The readers can contact the first author (email: zgwj@nbt.edu.cn) for source codes.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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