
3D 프린터 기반 스톱모션 애니메이션 산업과 제작프로세스에 미치는 영향

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3D printer-based stop-motion animation industry and its impact on the production process

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요 약

물리적 객체 기반 및 프레임 단위로 촬영되는 스톱 모션 애니메이션은 전통적인 애니메이션 기술이다. 이는 독립 예술 형태로서 긴 세월의 축적으로 독특한 예술 언어를 형성했다. 애니메이터의 끊임없는 연구와 함께 스톱 모션 애니메이션은 디지털 기술과 적극적으로 결합하여 재료 사용 및 촬영 기술의 발전에 큰 진전을 이루었다. 디지털 기술의 도입은 예술적 표현을 풍부하게 할뿐 아니라 새로운 시대의 지속 가능한 개발을 위한 기반을 마련했다. 본 연구는 3D 프린터 기술이 스톱모션 애니메이션의 제작과정과 산업에 어떠한 영향을 미치는지 탐색하고자 한다.

ABSTRACT

Stop-motion animation, which is based on the physical object and is shot frame by frame, is an traditional art of animation. As an independent art form, it has formed a unique art language through a century-long development. With the continuous exploration by animators, stop-motion animation has actively combined with digital technology, and has made a great progress in the use of materials and the technique of filming. the introduction of digital technology not only enriched it's artistic expression, but also laid the basis for it's sustainable development in the new era. This study investigates how 3D printer technology affects the production process and industry of stop motion animation.

키워드

스톱모션 애니메이션, 3D 프린트, 애니메이션 산업, 제작 프로세스

1. Introduction

Stop-motion animation is a kind of object as the object of the use of photographic technology by framing the form of animation, as the oldest form of animation as early as the beginning of the birth of the film gradually

began to sprout. In the era of computer technology is not yet developed, stop-motion animated exaggeration model and fantasy scenes are used in many movies, to meet people's imagination, it can be said that the art form is the earliest film three-dimensional effects technology. One of the characteristics of

stop-motion animation is hands-on production, you can use the life of a variety of materials, give full play to the imagination to create different styles of models and scenes. This most primitive, direct production method not only intuitively embodies the personal style of the stop-motion animation artist, but also better express the artist's taste, faith and emotion. Stop-motion animation unique production process and unique visual experience is also stop-motion animation so far by the animation and the audience favorite reason.

The traditional stop-motion animation has many shortcomings, such as the production process is complex, the production cycle is long, the cost is high, its traditional way of physical swing also has the limitation of picture performance. With the rapid development of computer technology, computer two-dimensional, three-dimensional animation gradually occupied the market, especially the unprecedented development of three-dimensional effects, greatly enhance the people's pursuit of visual experience. In this era background, the traditional stop-motion animation began to actively explore and 3D printing technology combined with the production of domestic and foreign stop-motion animation workers in the long-term exploration and research, combined with the latest science and technology, has been made in stop-motion animation A great breakthrough, greatly improving the stop-motion animation production efficiency.

II. The development history of stop-motion animation

Stop-motion animation is a special form of animation, its development has a distinctive characteristics of the times. The development of freeze-frame animation from 1907, the United States Victoria Granville company an unknown technician invented the "by the standard shooting method", the method is the use of the camera to shoot the scene by frame to shoot. By the 1920s and 1930s, the creation of stop-motion animation continued in some small production teams and avant-garde experimental films. From the early swept the world's mud doll stop-motion animation "Wallace&Gromit" series, to the fusion of Broadway musical style "The Nightmare Before Christmas", and then to

the unique style of clay animation "Chicken run", each stage Development is reflected in its strong characteristics of the times, especially in recent years, the landmark animated works "Tim Burton's Corpse Bride", "Coraline&the Secret Door" and so on, the film in addition to the late computer special effects technology has superb skills in the animation Role of the production, the expression of the fineness of the capture is also quite effort.

Relative to the West, China's dolls have a place in the cartoon. Rich in Chinese folk art characteristics of the shadow play, puppet show and other art forms for the development of Chinese stop-motion animation has laid a solid cultural foundation. From the 50's puppet "Ma Liang", paper-cut "pig eat watermelon", to the 80's "Avanti's story" and "Cao Chong Weighs the Elephant" and so on, there have been many ideas clever, fine picture of the stop-motion Animated works.

III. The Application of 3D Printing Technology in Stop-motion Animation

Stop-motion animation is the animation art in the production process of the most complex form of an animation, the screen every little change brought about by the workload are ordinary people can not imagine. For example, the role of a very subtle expression changes in the two-dimensional animation only need to add a few original paintings in the computer three-dimensional animation may only need to adjust the relevant bones, and for stop-motion animation, it is not so simple, It takes the animator to spend hours or even days to make the models of these changes.

In the stop-motion animation using the replacement method can create a large number of extrusion, deformation effect, many stop-motion animated films use this relatively simple way to create the role of expression, but the traditional replacement of the defect is also obvious. For example, in a two-shot animation, each second need to use a different model, a complete film needs countless replacement model, for the traditional manual carving and color way is not only a huge Energy, cost is also very expensive. Second, the artificial face model in the fineness or the number are far from meeting the expression of the role of the role, to a large extent restricted the role of

emotional expression. Third, the role of facial animation is a difficult, tricky and very fine work, animators will spend a lot of energy to ensure that the role of expression in place, which largely affected the progress of the shooting.

Want to show animation in the stop-motion animation is very artistic and appeal of the exaggerated features, these replacement steps can not be omitted, the traditional stop-motion animation of these defects has been fixed animation industry is difficult to solve the problem, to this end, the famous American stop-motion animation company first to 3D printing technology into the traditional stop-motion animation production, in order to solve the above problems achieved a breakthrough results.

Since the advent of the century, this technology has brought the gospel to all areas that require solid models, and it is a leap in technology for stop-motion animation. With 3D printing technology, the role of the designer can directly use the computer three-dimensional software to create the role of modeling, freedom to design and copy the role of expression, so that the role of animation is more abundant and in place. In addition, 3D printing technology can also be used to create and copy sets and props, greatly saving the time of artificial production, but also gives the designer greater freedom of creation. Fly in the ointment is that the current market, the purchase and use of the cost of the printer is still quite expensive, there is still a big budget in the spread of the problem. Technology is a combination of scanning technology, printing technology and computer graphics technology, complex and complex technology, the need for close cooperation of various departments to complete.

In the production of "ParaNorman" First of all, the expression designer will be the role of the sculpture model into the computer to generate digital models, two-dimensional animators by observing the digital model to design the role of the set of expressions, they are the face of the model, Will also use the voice of the voice of the actors to correct the role of speaking when the mouth type. Then, when all the character expressions are determined, the animator begins to make the model group, and for each role to develop their own skin color

map. At this stage, the expression designer only need to make a key model, the computer software will automatically generate the middle of Dayton and computer sculpture. Then, the most critical step is done by a printer that has been debugged by the Rapid Prototyping Assistant to print out these huge numbers of face models one by one. Finally, the expression designer will be thousands of face model number classification, neatly into the separation of countless file box composed of "face model library" to prepare for shooting when you can accurately access. This technology in the "Coraline & the Secret Door" in the production of the first use to achieve a sensational success, on the one hand, it is to a large extent, enrich the role of the role of the play, so that the role of expression changes more delicate and smooth, On the other hand, it saves the entire film production for nearly four years, greatly reducing the stop-motion animation production cycle.

IV. Conclusion

Although the current 3D computer animation technology has been spirited, 3D character portrayed vivid, but stop-motion animation has always exudes its own charm, has a unique charm. But also through the 3D printing technology to make people express the mass expression of the animation more vivid and smooth. With the help of this new technology, you can shoot a lot of big action and special effects of the scene. Although some scenes are very difficult to shoot, spent a lot of time, but it created a new stop-motion animation mode, is likely to become the future direction of the development of this animation.

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