Research on Computer Two-dimensional Animation Creation Tools and Processing and Editing Technology

Xiaoqing Zheng
Sichuan University of Culture and Arts,
Mianyang 621000, Sichuan Province
4302162@dlvtc.edu.cn

Abstract: This article analyzes the creation process of two-dimensional computer animation. The research content of this paper includes key frame generation, production of intermediate images, layered production, coloring and rehearsal processing, reasonable use of library images, combined with specific applications of authoring tools such as Flash software, animo software, TOONZ software, and FlipBook software. The author studies the specific application of computer two-dimensional animation processing and editing technology. The purpose of this article is to optimize the process of computer two-dimensional animation creation and improve the application effect of the two-dimensional animation produced.

1. INTRODUCTION
It is not enough for the description of the process in a multimedia project to rely only on text information or graphic image information. In order to achieve a better description effect, we need to use animation. Animation can show the process of things change more intuitively and in detail. Animations express more information than static pictures and take up less storage space than videos. Compared with video, the processor requirements are relatively low. Moreover, it can also illustrate processes that cannot be recorded in video, such as the movement of electrons or planets, through simulation. Therefore, computer animation plays a pivotal role. Reasonable use of animation in multimedia courseware can greatly enhance the teaching effect.

2. ANALYSIS OF THE CREATION PROCESS OF COMPUTER TWO-DIMENSIONAL ANIMATION

2.1. Key Frame Generation
The first task when performing computer two-dimensional animation processing is to do a good job of generating key frames. The rationality of the content will also directly affect the rationality of the animation production results. In the specific application process, more than 60% of the screens will use cameras and scanners to complete content entry. At the same time, in the process of continuous optimization of digital technology, the proportion of its use is also increasing. In specific applications, it is based on the digital instrument to complete the digital content entry for some departments with perfect service system. For example, in the work of the animation technology department of CCTV, the original pencil drawing will be recorded with a scanning instrument in the early stage, and then the production line will be used to complete the content processing, thereby obtaining a reliable technical processing effect. In the context of the continuous improvement of computer software optimization, the software will also be used directly for processing. This can also effectively improve the effectiveness of
the animation production process. In addition, in the software application process, operations such as dynamic modification, deletion, information retrieval, and information storage can also be dynamically modified according to the actual situation, thereby improving the reliability of animation production results.

2.2. Make the Middle Screen
The system will start the production of the intermediate image after the key frame generation processing is completed. The rationality of the content will also be directly related to the effect of animation production and enhance the richness of two-dimensional animation content. In the specific application process, the system can directly use the computer to control the number of intermediate frames, and use the production software to process the production frames. At the same time, the system can also organize the intermediate pictures based on interpolation to obtain the required connected pictures. At present, the application effect of digital technology is continuously enhanced in the processing process. This can also better complete the picture processing work and improve the picture clarity by 30%-40%. In the process of processing, the system can also handle the tedious labor intensity, so as to improve the accuracy of the intermediate image production results on the basis of ensuring the integrity of the production image content.

2.3. Make Layered Production
The computer system starts the layered production of the screen after finishing the intermediate screen production and processing work. The optimization result of the content can also effectively improve the layering of the two-dimensional animation production result, and improve the application effect of the production result. In the production process of traditional two-dimensional animation, each frame of the picture will use multiple layers of transparencies to complete the picture superimposition process, to achieve the purpose of enhancing the richness of the two-dimensional animation content. In the specific application process, the computer system directly uses the computer to complete the processing of the screen content. In this way, reliable layered production results and related requirements for production accuracy can be obtained. It should be noted that in practical applications, the computer system will also according to the state of the influence of light transmittance, the number of transparent films processed at a time cannot be more than four. In this way, hierarchical processing can also be better used in the application processing of animation software, thereby improving the reliability of the analysis results.

2.4. Coloring and Rehearsal Processing
In the process of this link, we need to pay attention to the following. (1) Perform coloring treatment. This is also a very important link in the process of 2D animation processing. When using computer software to start auxiliary coloring work, it can effectively increase the coloring efficiency by more than 200%. Compared with the traditional artificial coloring process, the accuracy of the line drawing process using the computer is more than 99%. Moreover, the computer will not be affected by the content of the pictures at all levels in the application. In addition, the application effects of drawing paints, palettes, airbrushes and other tools provided in the software can also approach the application effects of traditional painting, thereby improving the reliability of the analysis results. (2) Do a good job of rehearsal processing. The computer can also complete the sketch production on the computer screen when the two-dimensional picture special effects are processed. Moreover, this can also improve the timeliness of problem discovery and ensure the rationality of the results of the drawing.

2.5. Reasonable Use of Library Diagrams
After completing all the above-mentioned work content, the computer enters the link of using the library map. In the process of computer animation production, its character modeling can successfully complete the animation production. Moreover, the computer can also be used smoothly in the gallery during the application process. The whole modification process is more convenient, which makes it
easier to organize the contents of the gallery. In the entire object processing process, the two-dimensional animation processing technology is a very basic processing technology. In the current application process, the basic animation processing software is Flash software. In the specific design process of this software, its important object is the basic element of animation. In the application process, in order to improve the use efficiency of the software application process, the completion of Fla source file content sharing processing based on Flash software is beneficial to improve the reliability and practicability of the analysis results.

3. COMPUTER TWO-DIMENSIONAL ANIMATION CREATION TOOL

3.1. Flash Software
Adobe Flash (formerly known as Macromedia Flash, Flash for short; its predecessor, FutureSplash) is a two-dimensional animation software designed by Macromedia in the United States (acquired by Adobe). Among them, Adobe Flash is used to design and edit Flash documents; Adobe Flash Player is used to play Flash documents. Judging from the current usage, more than 70% of Internet web pages will choose this software to play and produce vector animation files. Moreover, the animation format obtained by the Vector Graphics algorithm occupies a relatively small storage space, which can save storage resources. The output format of the two-dimensional animation made by Flash software is swf format, which belongs to a special application mode. Before the software stopped updating, more than 95% of web browsers around the world would use Flash Player as the default player. In the application, the software has the advantages of easy operation and strong programming performance, which improves the reliability of the software application process.

3.2. Animo Software
The animo software is a two-dimensional animation production department developed by Cambridge Animation Company in actual application. In the process of system application, it mainly relies on the Windows NT platform to optimize the design, and the SGI O2 workstation will also be used in the application to assist the design work. The application functions of the software in specific applications are as follows. (1) Hierarchical services can be provided in the software application process, and the integration of Animo elements can be successfully completed during the service process, thereby enhancing the use value of the analysis results. (2) Provide hierarchical output function. According to the actual needs of the application process, the smooth output of the image file can be completed smoothly with the help of the Animo scene. Moreover, the obtained QuickTime movies file can also be used with corresponding tools in subsequent use, thereby improving the reliability of the analysis results. (3) The software also provides an extended menu system, and also has functions such as timing processing, node optimization and sorting, and keying. In this way, the application requirements of the system can be better met and its application value can be improved. This is also an important factor in the popularization of the software in many fields [1].

3.3. TOONZ Software
Similar to the animo software, TOONZ software is also a two-dimensional animation processing system that is often used in practical applications. Meanwhile, the software can also provide 3D animation production services to meet the production needs of different animation scenes. In the specific application process of the software, its content also includes the Xpress system, the animation line nonlinear editing system, the Internet information storage system, and the SD/HD post-special effect improvement system. In the meantime, it has abundant application functions in the system application. Firstly, according to the requirements of two-dimensional animation production, the computer can provide corresponding layered services in the application, and accurately extract and optimize the layered elements. In this way, the relevant requirements for data collation can be met. Secondly, in the management of output functions, the computer can accurately output information content such as pictures and videos according to specific requirements. This also greatly enhances the
use value of the analysis results. Thirdly, the image optimization function. In the process of software processing, the computer can smoothly complete the content of image arrangement, film and television special effects production, etc., thereby enriching the final presentation effect of two-dimensional animation [2].

3.4. FlipBook Software
Except to the first several commonly used editors, FlipBook software is also an editing software often used in the process of two-dimensional animation production. The software can assist animators to scan the content under the camera during the application process. Simultaneously, it can also record the entire drawing process, and with the help of an editable output rate table, it can assist the animator to adjust the shots that need to be played according to the scroll of time. In the course of use, relying on the software can also smoothly complete the coloring of the animation content before putting it on the network. Its processing efficiency is 60%-70% higher. For the characters in two-dimensional animation, each animation content will be configured with a set of palettes. The palette also provides more than 1600 colors for animators to choose, which greatly enriches the application content. Besides, the software also has a good storage function. If a new color is used in the application, the software will also automatically cover it. At the same time, the system can store the color of the previous layer to facilitate the subsequent comparison of the color effect [3].

4. ANALYSIS OF COMPUTER TWO-DIMENSIONAL ANIMATION PROCESSING AND EDITING TECHNOLOGY

4.1. Vector Graphics Technology

4.1.1. Geometric Graphics
When processing two-dimensional computer animation, vector graphics technology is a commonly used processing technology. In the entire technical system, geometric graphics is also a very important application technology. The editing principle is to use geometric transformation on the basis of the obtained vector graphics to obtain the required new geometric graphics. Judging from the actual transformation situation, there are many variations, and the details are as follows. First, translation conversion. In the established vector model, relocate the new initial point of coordinates and record it as point P. The vector graphics reach the new coordinate point by translation, and the scale transformation after the movement is shown in Figure 1. Second, scaling and transformation. In the established vector model, the new coordinate initial point is repositioned as the reference point, which is recorded as P point. The vector graphics are scaled from this initial point to obtain a new vector animation graphics. Third, rotation transformation. In the established vector model, locate the new coordinate initial point as the rotation reference point, which is recorded as P point. The vector graphics start from this initial point to rotate the angle, and after rotating to a predetermined angle, a new vector animation graphic is obtained [4].

![Figure 1. Schematic Diagram of Translation Conversion](image-url)
4.1.2. Bezier Curve
In the application and development of geometric graphics, Bezier curve plays a very important application value. The curve is composed of one or more sets of polygonal polylines during the drawing process. The curve graph obtained can be adjusted by changing the relative position of the fixed point in the application, which has good flexibility and dynamic characteristics. In the specific application process of the curve, the application of the Bezier curve can be classified into two types. The specific content is as follows. (1) Refined vector analysis method. This method can ensure the continuity of the entire line content after vectorization. However, its application process is more complicated, and the loss cost will increase by 10%-20% compared with the standard method. (2) Non-refined vector analysis method. The operation flow of this method in the application process is relatively simple. However, it is easy to have deformation problems after vectorization processing, which interferes with the final application effect. In this regard, it is also necessary to strengthen the preprocessing of image information before making the Bezier curve to obtain a vectorized two-dimensional animation graph with a re-engraving rate of more than 95% [5].

4.2. Two-dimensional Body Gradient Technology

4.2.1. Vertex Correspondence Technology
In the application process of the two-dimensional body gradient technology, the vertex correspondence technology is an important branch condition. The technology in application can be divided into the following two branches. First, the contour vertex processing algorithm. In the application process of the algorithm, the source polygon and the target polygon are used as the application wireframe of the entire technology, and the line optimization work is carried out on this basis to obtain the most optimized processing scheme. There are some complicated images in two-dimensional animation, and this method cannot identify all the vertex information. However, it can speed up the finishing efficiency by more than 50% in simple graphics. Second, the skeleton matching algorithm. In the application process of this algorithm, the characteristic points in the graph will be collected, and the method of constructing a matrix will be used to carry out the line optimization work. This is conducive to get the most optimized processing plan to meet the basic needs of different application situations [6].

4.2.2. Vertex Path Technology
In the application process of the two-dimensional body gradient technology, the vertex path technology is also an important branch condition. This is also an important limiting condition for solving the problem of gradual changes in two-dimensional shapes. In the specific problem solving process, the system will use the linear interpolation method as the optimization plan for the entire processing process. This method also has strong convenience and can meet application requirements in different situations. In the process of algorithm application, due to the algorithm itself, the data obtained will have problems such as shrinkage and self-intersection, which will also cause the deformation of the two-dimensional animation content. Based on this, in the specific processing process, the corner
The interpolation method will also be added in the algorithm integration process to correct the problems in the two-dimensional body deformation process. This can improve the completeness and scientificity of the obtained graphic content [7].

4.2.3. Intermediate Frame Animation Technology
Except to the above two sets of branch content, the intermediate frame animation technology is also an important branch condition in the application of the two-dimensional body gradient technology. The processing quality of this technology directly affects the gradual effect of the two-dimensional shape. In the specific problem solving process, the technology will integrate the motion trajectory algorithm and the vertex corresponding algorithm into the entire processing process to determine the starting frame position and ending frame position of the graph. Subsequently, the technology will also use automatic generation and coloring technology to organize the obtained graphics content, and will also complete automatic verification during the algorithm integration process. This can complete the correction processing of the related content of the two-dimensional body deformation process, make the obtained graphics more complete, and then meet the application requirements of the two-dimensional animation processing process [8].

5. Conclusion
In summary, the process of two-dimensional animation processing requires not only more solid drawing skills, computer knowledge and practice, but also a comprehensive understanding of animation character design. In the actual creation process, relevant staff should effectively combine the script and the script for in-depth discussions. Especially in the actual creative process, the relevant staff should have a more comprehensive understanding and perception, and make more in-depth changes from the technical level to transform the subjective "role modeling" into a "real role". This can make the animation process more humane, so as to achieve the best presentation effect.

REFERENCES
[1] Li Shensen. Research on the creative ideas of two-dimensional animation in the digital age[J]. Heilongjiang Science, 2020, 11(13): 134-135.
[2] Liu Fei. Research on the role of digital painting technology in the production of two-dimensional animation [J]. China New Communications, 2020, 22(13): 142-143.
[3] Fu Jiaye. Analysis of the diversity exploration of print elements in the creation of two-dimensional animation [J]. Drama House, 2020(13):147-149.
[4] Li Shurui. Research on the Cultivation of Innovation and Entrepreneurship Ability of Animation Majors——Taking the practical teaching of two-dimensional animation creation under the direction of serving local economic development as an example [J]. Art Education Research, 2020(08): 150-151.
[5] Wang Huiying, Meng Xiangxu. Research on computer two-dimensional animation creation tools and processing editing technology[J]. Digital World, 2018(12): 115-116.
[6] Chen Chuanzhi. Compound creative techniques in computer animation [J]. Artwork Jian, 2017(10): 148.
[7] Luo Jialing. A brief talk on computer animation and computer graphics in computer technology[J]. Heilongjiang Science and Technology Information, 2016(07):163.
[8] Lin Zhen, Ma Yangyang. A brief talk on computer two-dimensional animation creation tools and processing and editing techniques[J]. Journal of Shangqiu Vocational and Technical College, 2016, 11(05): 45-47.