

The technology of marking animation based on virtual reality

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Received 1 October 2013, www.cmnt.lv

Abstract

This topic mainly the manufacture flow which usually uses on the domestic present film and television animation based on virtual reality profession in carries on the analysis, elaborated that further strengthens the digital special effect effective application the necessity, the union concrete case development "the effective application "the around contrast. Unifies in our country movie, the television as well as the advertisement work is good or bad points carries on the analysis. At present in domestic and foreign, our country already had set up the corresponding research, the production as well as the teaching organization. Myself believed how to reduce equipment's loss, how the more comprehensive performance screenwriter's thought that how more comprehensive development digit special effect research and so on application domain to take the film and television animation creation the important thoughts.

Keywords: Animation; virtual reality; animation manufacture; digital

1 Introduction

In film and television animation manufacture profession domain, all visual and sense of hearing special effect performance, regardless in the traditional technique and the modern age realizes in the method to use each kind to regard the audio frequency source material after processing obtain. Using present's sophisticated equipment as well as the performance technique may more quickly, the convenience, comprehensive and reduces the cost. [1]

The Chinese history of animation, which was created in the 1920s, has produced a lot of excellent animations and comic works till now. But with the development of market economy, the development of animation industry has not been synchronized with the speed of industrialization. As the rise of the animation in the United States, South Korea, our country was stimulated to begin to pay close attention to the development of animation industry. Although the cartoon industry in China started later, the state concerns about the value of the animation industry in the cultural and creative industries, which has recognized its great potential, so all levels of governments have introduced a series of animation development aid policies. In 2006, the State Council transmitted the inions oh Prorating Chinese Cartoon Industry Development, then the Chinese animation industry obtained firstly development in the industrialization road. [2]

As the famous historic city, Hubei, limited by the economic level, its animation industry has lagged behind the industry in Hangzhou, Shanghai and other developed cities. So the city government has published a series support policies in order to encourage Hubei local animation enterprises. The consumption of national animation industry base, in Hubei High-tech Development Zone, is still in the forefront across; the country. [3] At the same time, Anhui Publishing Group, with the powerful publishing capa-

bilities, has facilitated the publication of products for the local animation enterprises. Although the development level of Hubei animation industry is not at the forefront in the whole country, but it has several distinctive original animation businesses. As we all know, the originality. The vital force and the cornerstone of the development of animation industry can reflect the overall development potential of Hubei animation enterprises.

With the expansion of anime audience, the quantity and quality of the animation products continues to be expanded and enhanced, which is forced by the market. But the current output of the animation products in Wuhan is far less than it in the developed areas, which cannot make any challenges for other domestic animation market. It is vital for the animation industry to form a competitive industrial chain. So the key problem for Wuhan animation industry is how to promote the development of animation industry and outstand in it.

2 Related technologies

2.1 3D

Nowadays, lots of money and efforts are spent on 3D animation making. As an important part of Construction of spiritual civilization, Chinese government has paid much attention to film and television animation. In fact, the production process of film and television animation works had many key problems to solve because of its complex models and huge amounts of data, such as the project management, scheduling of team members and capital allocation. In order to overcome the difficulties, most of the foreign teams used some professional software like Shotgun, NXN, QUBE to do the work. [4] But Chinese teams had to face the reality that we do not have such kind of tools. So it was strongly required to develop software

which could be used to efficiently manage the process of 3D animation making. E.g. traditionally, the Tom and Jerry animation is shown in Figure 1.

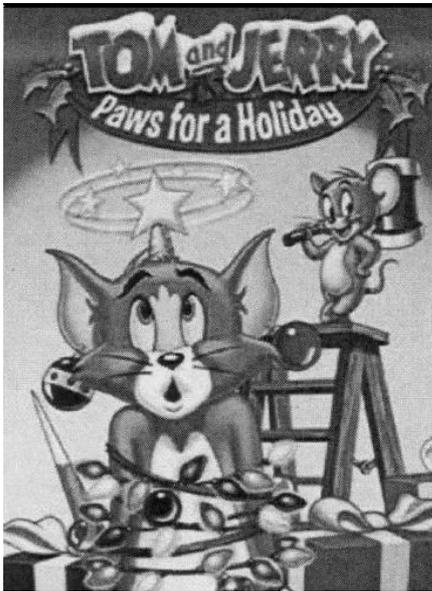


FIGURE 1 Tom and Jerry animation

The 3D animation management system could track the whole process of the project based on the analysis of the functions. The software had two parts: project management and scheduling of rendering system. The first part was consisting of projects, assets, members and data statistics. The second part was mainly to schedule and coordinate thousands of rendering computers to work together more efficiently.

The system employs the B/S (Browser/Server) architecture. The software system had some subsystems, they were connected by the ESB(Enterprise Service Bus). SOA (Service-Oriented Architecture) was used to sure that the subsystems modules were configurable, extensible and with low coupling effects. The system used HDFS (Hadoop Distribute File System) to complete the management, storage and retrieval of large amounts of data. The design of user interface was based on Ajax (Asynchronous JavaScript and XML).

2.2 VIRTUAL REALITY

By analyzing the development of current international and domestic animation industry, it is found that the animation industry is concerned in the international market, and it is one of the most extensive market prospects industries in the modern times. In a new round of knowledge-based economy, how to develop the animation industry with Chinese characteristics has been widely discussed today. Animation production is an activity which is greatly dependent on a person's creativity and imagination, and embodies the characteristics of knowledge-based economy. [5] The computer-aided design system that is mainly an interactive graphics system, analyzing and computing, primarily provides design tools for designers and only supports a single designer's independent design and human-computer interaction; however, it can not inspire the designer's

creative thinking and support collaborative design. Part codes is as follows:

```
def project--create(request):
    info={}
    if request.method=='POST':
        name=request.POST.get('name',"")
        status=request.POST.get('status',"")
        type=request.POST.get('type',"")
        user = request.POST.get('user',"")
        start time=request.POST.get('start time',"")
        end time== request.POST.get('end time',"")
        desc=request.POST.get('desc',"")
        create time datetime.datetime.now().strftime('%Y-%m-%d')
        Project.objects.create(name--name,
            status=Status.objects.get(id=status),
            types=Types.objects.get(id=type),
            user=User.objects.get(id=user),
            Greatestime=create time, start time=start time,
            end time=end time, desc=desc)
        info['success']=True
    return HttpResponse(simplejson.dumps(info))
```

The theoretical basis of this paper is the biological evolution science, computer science and design methods. Its main algorithm is evolutionary theory of the biological science. Its implementation depends on computing models of computer science, algorithms and visualization techniques. The ultimate target is to serve animation producers and innovative designers in the information age. This paper intends to develop our own proprietary three-dimensional computer-aided production software to support the design of animation production and product innovation. Its main feature is using generation technology, component technology and visualization technology to provide a software design platform which is quickly response to the market demanding.

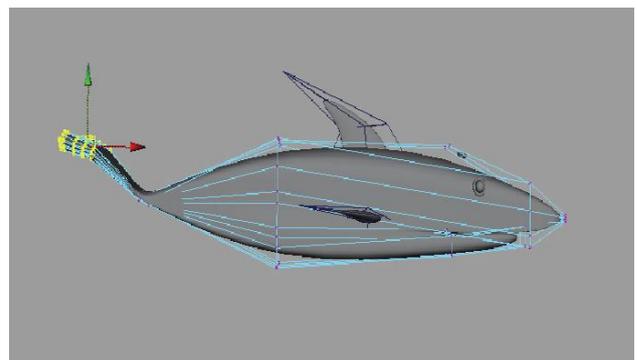


FIGURE 2 The shark shape based on virtual reality

The fitness is as shown in Equation (1).

$$fitness = \frac{1}{\sum_{i=1}^n \frac{|Best_i - Current_i|}{Best_i}} \quad (1)$$

This paper first uses evolutionary computation and niche genetic algorithm to generate a variety of components, and then uses software component management and assembly technology to assemble produced components and artificial designed components together, and present the appearance in the form of three-dimensional. These

components are generated by mathematical models and genetic algorithm, so they are more novel and can be reused. As the appearance is novel and is generated with high efficiency, it can improve market competitiveness.

2.3 FLASH

With the content digital industry developing fast, animation industry becomes a sunrise industry in today's world for the rapid rise of huge profits. The current global animation industry has become the United States, Japan, Korea and so the pattern of state powers. The Government of our country investigates situation, which made a decisive decision-making. In April 2006, the State Council transmitted the Ministry of Finance, ten ministries and commissions such as the Ministry of Culture, about the development of China's animation industry a number of opinions (32 documents), from the institutional management, marketing management and creative research into three areas, outlined Chinese animation industry has a new territory from the Chinese animation industry has ushered in the development of the spring. With the development of arts and animation, Flash animation network has shown a good trend, however, emerged from the ongoing work of the Flash animation of view; there are a lot of questions.

Flash animation for the current existence of the problem, the author studies the use of literature and theory and practice on the production of 2D animation Flash theory and technology for the exploration and research. First of all, the production of 2D animation for Flash to do the theory is discussed. Animation principle include: extrusion with tension, action to prepare, perform design, exaggeration, follow the action beginning with the smooth motion and overlap the end of the buffer, the speed of circular motion and deal with aspects of eight; Animation sports law, including: the person go running and jumping sports law, four-legged animals, and go run sports law, the law of sport fish, the movement of birds, wind, rain, snow, smoke and water sports, such as the laws of natural phenomena; the art animation theories include: drawings, sketches and characters, such as art design perspective the principle of knowledge, the selection of color, property, emotion and color contrast, such as knowledge of animation; Flash lens design theories include: a bird's eye view, looking down, looking up, head-up and tilt the lens of five basic position, push, pull, roll, shift and rise (fall) to the five basic lens, vision, panoramic, close-range and close-up view of five different style fade into the mask type and then type the three commonly used microscopy techniques. Image Ready software implementation using the Export GIF animation technology innovation, the technical characteristics of Using Photoshop is to achieve the production of animated bitmap effects of technological innovations, the production of a special font of technological innovation. Finally at the basis of the above-mentioned studies, the independent creation of a Flash animated short film "When will the moon be clear and bright" [6] and the animated short film production the main line flow, demonstrates in detail the production of 2D animation Flash principle, areas such law and the lens of the theoretical knowledge and technical skills, practice. So as achieve a combination of theory and practice.

Through the above-mentioned theories and techniques of research, aiming to Flash animation to re-positioning technology and the arts: to grasp the law of animation principles and exercise to strengthen the ability to shape animation; focus lens design, improve the capacity of narrative and performance; with other technical vision performance rich Flash animation and finally to promote the faster development of Flash animation, at a higher platform to expand its application areas, which our country's animation industry to promote rapid and healthy development of meaning. First, the theory of Flash animation on the entire animation to explore the theory of building major role in promoting, at the same time the technological changes made improved the Flash animation technology; two are a comprehensive introduction to the entire animation production process, the production of different methods specifically to try and make a comprehensive comparison, the process of making possible the existence of problems, solutions and related techniques are described for the members of the profession and the majority of animation enthusiasts to provide a useful reference work, help improve the quality of their animation, and basic skills, for them to join our country's animation industry must lay the foundation.

3 Model and edit using computers

Since 1960s, computer has been used to draw graphics. Now with the popularity of personal computer and the development of graphics technology, computer graphics has already extensively applied to each field of animation making. Graphics technology has been an essential part from drawing elementary graphics to rendering senior graphics.

VR is a kind of integrative technology related to computer, sense passing and meter age, simulation, micro-electronics. Employing the three-dimensional graphics creating technology, multi-sense interactivity technology and high-resolution display technology VR will create true to nature three-dimensional scene. Users with the help of data gloves, head mounted displays or the simple keyboard and mouse can touch, operate every object in the scene, go anywhere they want and do everything they like, as if he was personally on the scene. By now, VR has been widely used in drilling, sightseeing, shopping and gaming. The using of VR in education is being studied.

Compared with traditional handmade pictures, plotting with computer can reduce duplicated operation, saving much work force and money to cut cost and improve production efficiency. The thesis mainly studied then how to carry out vector to turn graphics, and carry on editor. Based on the object oriented method, several models of object oriented graphic systems are give in this paper. This thesis mainly discusses the class library of graphic system, generic graphics edit system and cartoon technique, defines the data structure; to describe those basic graph elements aim at to the design of cartoon, this thesis also defines the structure layer and basic operation of those basic graphs elements (Figure 3). This graphic system is a particularly graphic editor for design of cartoon, which base on the generic graphics edit system and cartoon technique.



FIGURE 3 An example: glasses

This subject is to study the implement of drawing vector graph. At first this thesis introduced the related knowledge and technology needed in drawing graphics, then it gave a fully introduction how to implement a drawing system, including the devise of class structure, designing conceive, and the solution to solve problems in programming. A way to edit Windows metafile is put forward in this article. It make convenience of the editing process; greatly through transforming the records of the Windows metafile to objects. In addition, the author dissertated the design of the classes in the system and the key technology of main module. There are two scene in Figure 4 and Figure 5 for an example.



FIGURE 4 Scene 1.

Next overall design and detail design of the system are introduced. It also expounds the basic function and the system data flow chart and work frame chart, then point out the items that should be paid attention in design. In detail design part, the key method of function in detail and the key data structure are introduced.



FIGURE 5 Scene 2.

The navigational information is important in Web-based courseware with VR supporting. How to design it? We should pay great attention to the design of VR scenes' navigational information: For one hand, we should tell the learners how to browse the VR scene. For the other hand, we should design navigational information for the VR scenes. We can do as the following: 1) Use HTML, Web pages to place navigational information for the VR scene. 2) Use movies for navigation. 3) Present navigational information by switch different viewpoints. 4) Use the "description" field of "Anchor" node to place navigational information. 5) Use image texture with text to place navigational information.



FIGURE 6 Person element

Give an example as shown in Figure 6. How to create the interactive behavior of VR scenes? We can only create simple interactive behavior without any logical control by using the VRML's events, nodes and fields. If we need to create much more intelligent zed interactive behavior, we should add some program to control the scene. Then, how to design the program? We can select these three methods as the following: 1) Use the descriptive language such as JavaScript to design program, which can be embedded into VRML's Script node. 2) Quote the external Java file though Script node. 3) Use VRML browser's API.

When use VRML to create VR scenes, we must give attention to 'the following three things: the beauty of the scenes, the transmission speed of the files and the executive capability. So when creating VRML, scenes, we must give our attention to the followings: 1) When designing object in the VRML scene, we should try to use primitive. 2) Pay attention to the quotation of the multimedia files related to the scene. 3) Make full use of the VRML's characteristic. 4) To the complicated scene, we can divide it or add and remove nodes dynamically. 5) Be careful to the use of the light. 6) Try to avoid to using too many programs to control the scene s iterate enamour.

4 Conclusion

In the new 21st century, with the further development and perfection of VR, the depth and extent of VR used in the Internet-based animation technology will be further exten-

ded gradually. VR, animation technology not as a new media form, will bring far-reaching influence to only on mankind's animation ideology and animation technology effect and quantity but also on the conception.

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