Application of Artificial Intelligence Technology in Virtual Reality Animation Aided Production

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Abstract: The three-dimensional animation developed by virtual reality technology has been widely concerned. Although the virtual reality technology has changed the traditional animation production mode to a great extent, the existing virtual reality technology is still not perfect, which needs to be further compensated by artificial intelligence technology, and the domestic research on this aspect is less. Therefore, this paper establishes the application of artificial intelligence technology in virtual reality aided animation production. This paper investigates the popularity of artificial intelligence technology course in animation major of colleges and universities, and thinks that the interdisciplinary education needs to be strengthened. In this paper, the application of artificial intelligence technology in virtual reality aided animation production is analyzed in detail. Firstly, it is considered that artificial intelligence makes animation tools intelligent and further changes the traditional animation production mode. Secondly, the importance of artificial intelligence technology in 3D animation modelling due to the current that virtual reality technology is not perfect. It needs to be improved through artificial intelligence technology. Finally, this paper analyzes the development trend of the integration of artificial intelligence and virtual reality. This paper believes that the intelligent artistic creation is the future development trend, and the efficiency and effect of animation production can be effectively improved through artificial intelligence technology.

Keywords: Artificial Intelligence, Virtual Reality Technology, Animation Production, Artistic Creation

1. Introduction

With the advent of the era of science and technology, the development of artificial intelligence changes rapidly. It has been accepted that machines beat humans on the chessboard. However, from the perspective of human evolution history, we can find that artificial intelligence has many shortcomings for human brain, and some contents cannot be copied, surpassed or replaced by machines. Human
creativity is something that machines cannot accomplish, which is also the value of human existence [1-3]. The creativity of the human brain bursts out in the stage of animation creation and releases the charm of creativity. With the change and innovation of the society, the animation form highly praised by people is also gradually improved. Animation production is mainly to fully express human thought, which is the real experience of life and the world. That is also the significance and value of animation as an art [4-6].

Animation creation has the thought and the spirit part, also has the body part. With the advent of the new era, we should change our views and attitudes towards things, because the development of animation creation is closely related to the progress of technology. The materials, space and time required for animation creation in this stage are different from those in the past [7-8]. In the context of the new era, the development of artificial intelligence is very rapid, so the animation production at this stage must be combined with technology to promote the progress of creation, reform and innovation. At the same time, the concept of animation itself as an art will change to a certain extent [9-10].

In this paper, the application of artificial intelligence in virtual reality animation production is investigated. According to the survey results of this paper, due to the interdisciplinary problems, most of the animation majors in Colleges and universities do not involve the professional knowledge of artificial intelligence, but in the actual virtual reality animation creation process, it is inevitable to use artificial intelligence. Therefore, this paper believes that we should strengthen the popularization of relevant knowledge, especially the principle and operation Enhancement of skills. This paper focuses on the analysis of the future development trend of animation creation. The analysis shows that due to the development of artificial intelligence technology, the intelligent animation creation tools will be further strengthened in the future, and the artificial intelligence technology plays an important role in the development of 3D animation field in China. The main trend in the future is the combination of artificial intelligence and virtual reality. The analysis shows that artificial intelligence technology and virtual reality technology play a complementary role in common development.

2. Artificial Intelligence and Art Design

2.1 Introduction to Artificial Intelligence
Artificial intelligence is the use of machines to complete the tasks of the human brain. At present, artificial intelligence can be divided into strong artificial intelligence and weak artificial intelligence. Strong artificial intelligence is like something out of a science-fiction movies. Machines can communicate with the world like human beings. They can learn knowledge and solve problems by themselves. However, due to technical limitations, computers do not fully have the Independent-minded capabilities. So, there is the so-called weak artificial intelligence, which refers to the artificial intelligence that can only solve problems in specific fields, and it is difficult to reach the leading level in all fields. This is what experts call "transfer learning". Generally speaking, transfer learning is to draw inferences from an example.

2.2 Artificial Intelligence and Art Design
Art design integrates knowledge in many fields, including not only the expression of aesthetics, but also the logical thinking of philosophy. Therefore, it is not only the process of artists' creation, but also the process of logical thinking. Because of this, driven by the new age, art design and artificial intelligence have found a meeting point, and produced a series of ideas and applications combining artificial intelligence and art design. Artificial intelligence driven design is one of the problems being discussed in art field. Artificial intelligence can help designers get rid of tedious design steps, save design time and improve efficiency in some aspects.

3. Survey on the Popularization of Artificial Intelligence Technology Course in Animation Production Specialty of Colleges and Universities
Virtual reality technology has been developed rapidly in recent years, which plays a good auxiliary role in 3D animation production, and changes the traditional animation viewing mode. However, the current virtual reality technology still has the very big insufficiency. It needs to be made up by artificial intelligence and other technologies. In order to understand the current application of artificial intelligence technology in virtual reality animation production, it is necessary to understand the popularization and teaching situation of artificial intelligence technology in the field of animation production. Colleges and universities are the main places for talent cultivation and talent transportation. Therefore, this paper takes 100 universities with animation production specialty as the research object, and investigates the popularization of artificial intelligence technology.

In this survey, 800 teachers and students from 100 colleges and universities were investigated, including 600 students and 200 teachers. A total of 800 questionnaires were distributed and 789 were recovered, with an effective rate of 98.6%. According to the survey results in Table 1, at present, most colleges and universities have not set up courses related to artificial intelligence in animation production professional courses, and the popularization of principles is not good enough. More respondents think that in the actual animation creation will use the auxiliary tools about artificial intelligence technology, but they do not understand its principle. Most of the respondents thought it was necessary to popularize this knowledge. The analysis shows that animation design belongs to the specialty of design field, while artificial intelligence belongs to science and engineering. Therefore, there is a big subject difference. It is understandable that colleges and universities do not open classes. But this paper thinks that it is necessary to popularize the relevant knowledge. Only when we have a sufficient understanding of the tools, can we really use the tools well.

| Problem | Yes | No |
|---------|-----|----|
| Do you want to start a course on artificial intelligence? | 10% | 90% |
| Is it necessary to popularize artificial intelligence knowledge? | 95% | 5% |
| Is artificial intelligence technology applied in the actual animation creation process? | 93% | 7% |
| Do you think artificial intelligence technology has helped your animation creation? | 96% | 4% |

4. Discussion

4.1 Analysis of the Influence of Artificial Intelligence on Virtual Reality Animation

Artificial intelligence is the technology of machine learning human perception, and virtual reality is the perception technology of machine creators. Artificial intelligence can be trained and enhanced through virtual reality, and virtual reality can be improved and enhanced through artificial intelligence. Both of them have mutual promotion effect. In order to verify the influence of virtual reality technology on animation production and the effect changes after optimization of artificial intelligence technology, the corresponding experimental investigation is carried out in this paper.

According to the experimental results in Figure 1, when the traditional animation production is improved by using virtual reality technology, the audience's interactivity, immersion, illusion and fidelity in the specific viewing experience are effectively improved. According to the score of evaluation, the traditional animation production has little experience in interactivity and immersion, but it has been improved by combining with virtual reality technology. Analysis shows that the virtual reality technology changes the traditional animation into 3D animation, and the experience effect is better.
Figure 1: Comparative analysis of virtual reality animation and traditional animation

From the above results, we can see that the existing virtual reality technology in the animation production effect has not been very high score, which is mainly due to the current China's virtual reality technology still has a big shortage, which needs to be made up by artificial intelligence technology. According to the experimental results in Figure 2, the animation effect has been improved after the artificial intelligence technology is used to optimize and improve the virtual reality technology. It also got a high score in the evaluation of user experience after watching.
4.2 Artificial Intelligence Makes Animation Tools Intelligent

Traditional animation tools for a long time, there is no essential change, are using ink, paint and other tools for creation. With the development of computer technology and graphics equipment, computer-aided art design is gradually formed. Computer not only provides the basis for diversified animation design teaching, but also provides help for various innovative animation design expression methods and forms. At the beginning, computer aided drawing was based on sketch, and did not play a role in design. At present, the traditional design tools have been unable to meet people's increasingly high requirements for complex configuration, spatial structure, work details, functional analysis and so on. Although there is a lot of subjective thinking in animation production, there is also a lot of non-creative work. Traditional animation tools have strict requirements for tools and materials. Therefore, with the vigorous development of contemporary computer science, creators can use a large number of design software to visualize their inspiration, effectively shorten the production cycle and improve the limitations of traditional animation.

4.3 Importance of Artificial Intelligence Technology in 3D Animation Modeling

In the production of 3D animation, modeling is the first step of 3D animation, mainly including the production of animation scene model and animated character model. In the production process, virtual reality simulation technology is the main technology, adding animation character imitation, human-computer interaction and so on. Animated characters are used to present relevant content. At present, affected by China's computer technology, some technologies are still relatively limited, so in the application process, the construction of animated characters and scenes needs a lot of time, that is
to say, the modeling time cycle is relatively long. Therefore, in the future, we need to improve computer technology, especially the matching degree of artificial intelligence system, to improve the application of virtual simulation technology in employees.

4.4 Development Trend of the Integration of Artificial Intelligence and Virtual Reality

(1) The development of virtual reality must strengthen the real-time collection and analysis of environmental data, and the main technical progress should focus on the collection of large-scale network data and high-definition dynamic image data. The most important thing is to organize a spatial video data collection network, because the accuracy of intelligent analysis will be limited by the plane environment data. Only by collecting accurate spatial human and environmental data, can programs embedded in virtual reality obtain accurate interactive data with people.

(2) In the interaction between virtual and external world, qualitative and non-qualitative artificial intelligence technology is more popular. Qualitative artificial intelligence technology is the basis of game artificial intelligence. These technologies are predictable, fast, easy to implement, understand, test and debug. Although the technology is mature, developers still need to write a lot of scenarios and behaviors, and the non-qualitative method greatly increases the unpredictability of the game.

(3) The interaction between virtual reality environment and real environment is still a problem to be solved for a long time in the future, because if the real body data cannot be read, there will be no deep-seated interaction between virtual reality environment and virtual environment. This must rely on more accurate and sensitive sensors such as vibration, bio electrode, thermal energy, multi-directional pressure and airflow. Wearable data input devices can detect human activity data more accurately. Only in this way can "virtual human" and environment be closer to reality and interact with people. Finally, it can accurately simulate the real environment in the virtual state, and provide a feasible reference for the production and life of human beings and the progress of science and technology.

5. Conclusions

In the application research of artificial intelligence technology in virtual reality aided animation production, this paper deeply investigates the current situation of the popularization of artificial intelligence technology in animation major of colleges and universities, and analyzes the shortcomings and shortcomings of the current artificial intelligence technology popularization. According to the survey results, due to the interdisciplinary problems, there is basically no professional knowledge about artificial intelligence in animation creation specialty, so that the popularity rate of artificial intelligence technology in animation creation specialty is not high. The analysis shows that, in order to strengthen the overall strength of animation creation and related personnel training, we should strengthen the popularization of artificial intelligence technology, especially the basic theory and operation skills. In order to further study the optimization effect of artificial intelligence technology on virtual reality animation production, this paper makes a detailed comparative analysis through experimental investigation. The analysis results show that the use of artificial intelligence technology to optimize virtual reality animation can effectively improve the interactivity, immersion, illusion and fidelity of animation and the effect is significantly improved, which has been widely praised by the audience. This paper believes that the application of artificial intelligence technology in virtual reality aided animation production has a good prospect. Artificial intelligence technology is the core technology foundation to promote the virtual reality animation production in China.

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