A Brief Analysis of Postprints in 3D Animation and Virtual Reality Technology

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Abstract

Both three-dimensional animation and virtual reality technology constitute branches of emerging digital technologies, exhibiting characteristics of proceduralization, virtualization, and diversification. As computer program development continues to advance, three-dimensional animation and virtual reality technology can achieve progressive depth, thereby ensuring increasingly widespread societal applications. Based on this foundation, this paper investigates the practical implementation of domestic three-dimensional animation and virtual reality technology by integrating the main essential points of both technologies, aiming to guide new technology development to align with societal demands.

Full Text

Abstract

Three-dimensional animation and virtual reality technology are both branches of new digital technologies, characterized by programmability, virtualization, and diversification. As computer program development continues to deepen, the social applications of 3D animation and virtual reality technology have become increasingly widespread. Based on this context, this paper explores the practical implementation of domestic 3D animation and virtual reality technology by examining the key points of both technologies, guiding new technological development to align with social demands.

Keywords: 3D animation; virtual reality; digitalization

1.3 The Relationship Between the Two Technologies

Both 3D animation and virtual reality technology represent developments in computer programming, exhibiting both interconnections and distinctions.

In terms of similarities, both utilize virtual programs for image processing to construct operation programs with strong audio-visual effects. Simultaneously, both technologies can continuously expand their development scope according to human needs, achieving integrated program development of information resources. These practical activities are completed on the basis of meeting societal programmatic demands, with relatively clear objectives. For example, the application of VR technology in aviation experience halls and virtual animation design in film production represent primary areas of new technology application, featuring comprehensive and practical characteristics.

Regarding differences, firstly, their research directions diverge: 3D animation focuses primarily on image processing, while virtual reality technology emphasizes the restoration of object imagery. Secondly, 3D animation design requires innovation in form and style based on existing images, whereas virtual reality prioritizes multi-dimensional scene experiences. Finally, 3D animation involves singular processing of specific objects, while virtual reality demands design from more multidimensional perspectives for image perception. Thus, the development of these two new technologies involves both connections and differences, and properly managing their similarities and differences constitutes an important guarantee for continuous technological advancement.

1.1 3D Animation Technology

3D animation, also known as 3D animation, represents a product of computer virtualization program development [1]. The process involves: first, applying virtual programs to design virtual animated objects according to image construction proportions; then adjusting object dimensions, determining model movement trajectories, and establishing virtual camera motion and parameter variations; finally, setting external auxiliary conditions for subject object movement changes, such as lighting and color. When the automated program initiates, all relevant elements play simultaneously, producing the corresponding animated images. Compared with traditional 2D image transformations, 3D animation can integrate front, top, and right-side views to achieve comprehensive dynamic image utilization, resulting in higher image realism and clarity. As research on 3D animation technology continues to deepen, color matching and character image construction in 3D animation creation can become more substantial, with application scope continuously expanding [2].

1.2 Virtual Reality Technology

Virtual reality technology, commonly known as VR processing technology, achieves its implementation by establishing a virtual experience space that integrates multiple information interaction contents, providing users with simulated technologies for vision, hearing, and touch. VR technology combines internal computer programs with external programs through external interface windows to constitute a new virtual environment, achieving the “recreation

and rebirth" of specific external environments [3].

Compared with single-operation computer system programs, VR technology employs computer sensors to organically integrate human vision, hearing, and touch, making computer program movement trajectories clearer. Internal information sensors change according to users' physical reactions, featuring diverse perception fusion characteristics. Simultaneously, VR technology utilizes system programs to integrate all object-related elements in the real world, constructing a complete realistic image through VR simulation, thereby creating broader information communication channels with strong program experience and realistic simulation features. Furthermore, during practical application, VR technology places users' visual reception space within a completely enclosed virtual environment, providing more authentic visual experiences. Consequently, the visual nature of virtual images possesses more complete characteristics.

2. Current Development Status in China

The development of 3D animation and virtual reality technology in China began gradually in the 1980s, achieving initial results in the early 21st century. To date, China's 3D animation and VR technology development has realized multi-channel applications and comprehensive exploration. Examples include 3D animation, 3D graphic processing technology, virtual experience halls, and image simulation restoration technology, all representing direct manifestations of domestic 3D animation and virtual reality development. However, due to various limitations in China's computer technology development, expandable space remains in computer program technology research, allowing for broader exploration in future development. Therefore, the application and development prospects for domestic 3D animation and virtual reality technology are vast.

3.1 Practical Applications and Future Trends of 3D Animation Technology

3.1.1 Graphic Design Applications

The application of 3D animation technology in graphic design improves the processing of singular elements and enhances the visual effects of animated characters. On one hand, 3D animation programs such as PS technology are commonly used in modern graphic processing. For instance, when designers use PS for graphic advertisement design, they employ filters, blur, and other techniques to enhance structural integration features, establishing a programmatic system framework for image structure design. Utilizing multi-dimensional planar color fusion enhances structural image imaging advantages and highlights main subjects in the image. On the other hand, 3D animation employs systematic program structures for graphic design planning, effectively integrating relevant elements in images and improving automated color matching capabilities. In modern systematic processing, color matching operates according to specific programs, creating more comprehensive systematic spatial patterns and

transforming traditional 2D images into systematic color matching control structures to achieve enhanced design effects.

Future 3D technology development will further explore the relationship between graphic selection and 3D image processing, adding 3D technology parameters for color, brightness, and saturation to planar overall allocation programs. This will form a new diversified systematic image selection entity, achieving optimal color matching effects in modern systematic processing.

3.1.2 Film and Television Production Applications

The rational application of 3D technology in film and television production serves as a means for modern film and television work image processing. Firstly, program structure processing effectiveness in film and television production has been enhanced. For example, film and television character design can achieve prominent comprehensive image matching effects through post-production secondary composition. Secondly, the application of 3D technology can precisely control connection effects between post-production segments. Computer programs conduct systematic processing according to reference bases, performing dual comparisons of clear selection and fuzzy selection for each frame in film segments to identify optimal processing solutions, achieving comprehensive processing of film and television works. The integrated application of new image processing structures provides more flexible processing measures for modern film and television production research.

The application of 3D technology in film and television production will realize systematic planning of 3D image processing technology, increasing processing flexibility on the basis of existing technology. For example, multi-image simultaneous operation processing effects and systematic research using 3D technology as the main component of new technology research will bring broader program research information, thereby achieving comprehensive exploration of modern structural systems. This also represents direct integration of new technology with social programs.

3.2 Practical Applications and Future Trends of Virtual Reality Technology

3.2.1 Cultural Heritage Applications

Compared with 3D animation technology, virtual reality technology emphasizes network program image restoration and achieves comprehensive program structure operation. This restoration advantage of VR technology has become the primary technical basis for social cultural heritage management. Research on painting contents in calligraphy and painting works shows that researchers can restore the entirety of cultural works by employing virtual 3D coordinate scene restoration methods based on painting content. This advantage of VR technology provides broader reference value for modern cultural style restoration work

and improves the precision of modern cultural processing technology.

Comprehensive processing of virtual environment information will lead to integrated processing of virtual information resources. Future comprehensive applications of VR technology will gradually achieve cultural processing procedures for system program image restoration, expression restoration, and image information processing, providing technical guarantees for the inheritance and development of modern social culture.

3.2.2 Computer Program Development Applications

Virtual reality technology also plays an important role in computer program development. We consider computer program development as the secondary development of the VR technology 母体 (mother body) itself. The advantages of VR technology, such as sensory interaction and systematic information transmission, can unconditionally integrate with computer programs, reducing obstacles in system program development integration. This also serves as an important basis for comprehensive utilization of multiple resources in our system, enabling effective application of modern diversified conditions. The utilization of VR technology improves the comprehensive utilization rate of resources in program development, reduces transition time for new system development during computer program operation, and adapts to the needs of high-speed development and transformation in social computer research technology systems.

In future development, the application of VR technology in computer programs will further expand the program experience scope of VR technology through in-depth computer program development, extending from visual and tactile experiences to taste experiences, language control, and psychological image feedback. The comprehensive development of VR technology in computer programs will bring more comprehensive and objective new areas for technical research, guiding the comprehensive application of VR technology in computer program development. This also represents an important condition for further guiding VR technology development.

3.2.3 Educational Classroom Applications

The clever integration of new technology in social development serves as a primary driving force, providing ample support for a new round of talent cultivation. For example, teachers can use VR technology to design corresponding program forms based on classroom educational content. Realistic images bring more authentic color matching classroom effects, constituting an indispensable part of modern systematic design and creating more perfect student classroom experiences.

The application of VR technology in modern program systems has brought more substantial new design experiences to China's educational classrooms. Simultaneously, practical external elements of VR technology will gradually reduce

limitations in educational classroom VR technology application in future development. For instance, using virtual glasses instead of fully enclosed helmets will reduce investment costs for practical VR technology application and expand technology application breadth. This represents an important symbol of deep expansion in the integration of new VR technology with modern education systems.

Conclusion

In summary, 3D animation and virtual reality technology represent innovative embodiments of modern digital technology network integration. Based on foundational theories of 3D animation and virtual reality technology, this paper provides preliminary understanding of both technologies. Simultaneously, by examining current development trends of these new technologies in China, this study explores their practical applications across various social fields and future application trends, achieving integration between new technologies and social development needs. Therefore, research on 3D animation and virtual reality technology identifies supporting elements for new social development technologies.

References

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Note: Figure translations are in progress. See original paper for figures.