Retraction

Retraction: Research on Landscape Design System Based on Virtual Reality Technology and Multimedia Technology (J. Phys.: Conf. Ser. 1915 042070)

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This article has been retracted by IOP Publishing following an allegation that this article may contain unreliable references [1].

IOP Publishing has investigated in line with the COPE guidelines and have found the article contains references to withdrawn papers which has no significant relevance to the text and agree this article should be retracted [2].

The authors neither agree nor disagree to this retraction.

[1] https://pubpeer.com/publications/6561CBC09CC31C0C7AC2D29B9DEB97
[2] Juan Li 2021 J. Phys.: Conf. Ser. 1915 042070

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Research on Landscape Design System Based on Virtual Reality Technology and Multimedia Technology

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Abstract. With the gradual progress of urbanization, people gradually realize the importance of urban landscape. Landscape design is a design form of appearance art. People can use this art form to improve the scenery of many cities. It can also promote the progress of urban environment. Many experts believe that the combination of virtual reality technology and multimedia technology can effectively improve the beauty of the system outline of landscape design[1]. Moreover, the application of virtual reality technology can effectively help the landscape design. This paper introduces the concept and characteristics of virtual reality technology. At last, this paper puts forward its application in landscape design.

Keywords: Virtual Reality Technology, Multimedia Technology, Landscape Architecture, Landscape Design

1. Introduction

With the improvement of people's living standards, people gradually realize the importance of spiritual culture. People pay more attention to the comfort of living environment. Many people even like the connotation of urban culture design products. In fact, the rapid progress of China's industrial level has improved the speed of urbanization. It also improves people's ability to appreciate art and culture. The appearance of landscape design shows the improvement of people's landscape appreciation ability. Different landscape design can provide different wonderful feeling of many cities. This is incomparable to other designs.

On this basis, many experts have studied many ways of landscape design. People find that the cost of traditional landscape design is very high. The error of traditional garden design is also very high. In order to meet the needs of urban landscape construction in the new era, people need to design rich landscape[2]. Using virtual reality technology, we can achieve this goal more easily. This paper
mainly introduces the application characteristics of virtual reality technology (see Figure 1). On this basis, this paper puts forward the technical support of virtual reality technology. Finally, this paper gets the corresponding conclusion of landscape design.

2. Analysis of the main concepts and application characteristics of virtual reality technology

2.1. Analysis of main concepts

Virtual reality technology is a new visual effect technology. The content of this technology contains a lot of subject knowledge. Computer graphics and multimedia technology are branches of virtual reality technology. There is no doubt that virtual reality technology can contain many key advanced technologies. Virtual reality technology improves the ability of human-computer interaction. It can create a virtual environment. Moreover, this kind of environment can make people feel very real.

2.2. Analysis of ontology features

The ontology features of virtual reality technology have three main parts. The first basic feature is immersive application. It means that people can immerse themselves in the virtual environment. The second basic feature is interactive application. It mainly emphasizes the application form of human-computer interaction. The third basic feature is conceptual application. Through people's imagination, computer can simulate many kinds of virtual environment.

2.3. Application characteristics of breaking through the limitation of space

The foundation of virtual reality technology is network. The Internet can connect people with the world. Scientists are always trying to break through the limits of space. Virtual reality technology can achieve this goal[3]. The breakthrough point of this kind of space restriction must be virtual. People can use virtual devices to enter virtual space. People can find a lot of things in this virtual space. In virtual space, this technology breaks through the limitation of space.

2.4. Application characteristics of multi perception points
Virtual reality technology has the visual perception of computer normalization. It also includes auditory perception, tactile perception and motion perception. This shows that the advanced technology has the characteristics of multi-sensing applications. These perceptual abilities can also help people better immerse themselves in the virtual world. Therefore, many experts call virtual reality technology spiritual realm technology. In the virtual environment, designers can even control everything in the virtual world.

3. Feasibility analysis of landscape design supported by multimedia technology

3.1. Advantages of virtual landscape design

In fact, the landscape design of the garden must be controlled in the appropriate geographical scope. In the process of traditional design, people must arrange the corresponding environment through the transformation of the terrain and the planting of plants[4]. Multimedia technology can use large screen image expression to show the process of landscape design. People can observe a comprehensive overview of landscape design through the screen. This way can ensure the accuracy of landscape design.

3.2. Application of advanced algorithm

The layout of virtual environment will inevitably use a lot of data. We will find that many designers' drawings are three-dimensional. This kind of drawing usually uses Euclidean theorem to create coordinate system[5]. According to the calculation of GIS, we can see the data range of landscape design. This calculation process is based on high-level algorithm. The application of advanced algorithm improves the precision of landscape design thoroughly.

3.3. Plasticity of virtual space

The scope of virtual space created by computer is very large. This space can be extended indefinitely. More importantly, the designer can make any object in the virtual space change at will. People often call this kind of virtual space four-dimensional space. Designers can simulate the design of virtual garden by means of human-computer interaction. The customer will be the audience of the virtual space. They will also be able to see the wonderful virtual landscape.

3.4. Cost control is very low

Every user will consider the cost when designing the garden. The operation of funds needs strict control. The cost of landscape design should also be paid attention to by designers. Virtual reality technology can replace the traditional entity model. Virtual reality technology can even improve people's visual sense level. More importantly, the cost control of virtual reality technology is very low. This is in line with the wishes of many customers.

4. Analysis of the application of the landscape design system based on the combination of virtual reality technology and multimedia technology

4.1. Dynamic visit form
In the process of landscape design, the motion control of virtual space is very difficult. How to make people feel the beauty of the garden in sports is a very difficult thing. This kind of observation is also called dynamic observation[6]. We can combine virtual reality technology and multimedia technology effectively. On this basis, we can adjust the angle of dynamic visit. This can avoid the visual dead angle in the process of visiting (see Figure 2).

![Figure 2. Landscape design system based on virtual reality technology](image)

4.2. Adjustment of different exercise modes

Everyone's interest in visiting the garden is different. Many people like to visit the garden by car. Many people like to walk around the garden. Many people also like to take the elevator to visit the garden. Virtual reality system can provide many kinds of motion simulation technology. In the virtual space, users can choose a dynamic way to visit the landscape. Users can even adjust the speed at will.

4.3. Simulation of virtual object touch

In recent years, people have studied a lot of virtual gloves. Users can touch a lot of things in virtual space through this glove. For our bodies, the touch is real. The appearance of touch can also make us feel the simulation of virtual space. Unfortunately, the research cost of virtual gloves is very high. The cost of virtual space touch simulation is also very high.

5. Technical support for the application of virtual reality technology in landscape design

5.1. Establishment of database

Before building a complete landscape, designers need to store a lot of data in the computer. Designers even have to put this information in a database. The types of information include virtual plant data, virtual terrain data and supporting information data[7]. The data types in these databases belong to the unit of virtual space. The quality of the data types in the database will affect the quality of the virtual space.

5.2. Application of 2D drawing technology and 3D drawing technology
There is no doubt that modeling technology will be applied to virtual reality technology. Modeling technology includes two important parts. The first part is called two-dimensional modeling technology. This kind of technology mainly establishes the plane drawing. It is mainly used for simulation mapping applications. The second part is called 3D modeling technology. This technology is the main application of landscape design. The application software of these two technologies can be selected as common software.

5.3. **Application of multimedia video technology**

Multimedia video technology is often used in game development and visual software development. This technology is often combined with virtual reality software. The application of multimedia video technology can guarantee the frame rate jump out speed of virtual environment. It can reduce the delay of 3D scene[8]. Of course, the quality of equipment and corresponding hardware using multimedia technology can not be ignored. This can ensure the virtual space to avoid the problem of demoulding.

| Drawing tools | Main role | Application frequency |
|---------------|-----------|-----------------------|
| 2D drawing    | The application of virtual map and the drawing of some plane graphics | Medium |
| 3D drawing    | It is mainly used in the drawing of large buildings in landscape design | High |

6. **Application characteristics of virtual reality technology in landscape design**

6.1. **Visit from a comprehensive perspective**

The perspective of virtual space landscape design needs to be drawn up. In fact, users can walk around freely after entering the virtual space. We can't determine the route of the visitors. We can't determine the user's visual angle[9]. The application of virtual reality technology can improve the clarity of the overall visual angle. Users can determine the general appearance of the landscape design according to the visit from different angles.

6.2. **Comprehensive exchange of multiple factors**

In order to improve the visual characteristics of virtual space, designers need to add lighting and other auxiliary things in the space. Designers should put all kinds of factors in life in the virtual space. After users enter the virtual space, they can feel the breath of life. Designers should ensure the authenticity of the space of landscape design. Comprehensive communication of various factors can ensure the influx of life atmosphere. It can also improve people's visual effects.

6.3. **Combined application of audio technology**
Multimedia technology can not only provide people's visual effect, it can still provide people's auditory effect. The combination of audio technology can make the virtual landscape space more full of life characteristics. It can make people not feel the dullness of virtual space[10]. This way can break through the shackles of two rules. Sound can also be called extra dimensional information. The combination of audio technology is very excellent.

7. Conclusion

Nowadays, virtual reality technology has been widely used in landscape design. I believe its application prospect is also very extensive. However, we can not be too conceited, we should continue to work hard to improve the effect of the combination of virtual reality technology and multimedia technology.

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