Virtual Technology in New Media

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Abstract. Virtual technology and new media blend with each other and continue to collide, adding different fun to our lives. The interactive design in virtual technology allows people to see the world in the eyes of new media more realistically, making art closer to life and making the picture more vivid and vivid. The new media environment also makes virtual technology useful. It is no longer a tall thing in the eyes of ordinary people, so that ordinary people can also feel the changes that this technology brings to life. With the impact of the digital information age, people can quickly meet their needs for information and accelerate their pace of life; and in the process of impact, art and data blend with each other to form a new art form of new media art. This article focuses on the application of virtual technology in the field of new media. By establishing a new media database model and combining the interactive functions of virtual technology, the necessity of integration of virtual technology and new media is proposed. The data shows that 300 packets are sent per second, each packet size is 600 bytes (these can be set in the configuration file), the bandwidth of the transmitted data is 0.81 Mb / s, and the upper crosshead model is obtained. The results show that many functions of virtual technology are applied in the field of new media.

1. Introduction

In the field of science and technology, virtual technology is applied as a brand-new technology in all aspects of life; in the field of art, new media is also a new form of artistic expression. Compared with traditional art, this new form makes the original monotonous static art works become vivid. When new media is impacted by virtual technology, many new types of art gradually emerge. And the application of this technology in many fields, such as the Internet, animation, etc., has deepened its influence. Rather than saying that art and technology go hand in hand, it is better to say that art is constrained by technology. This article mainly studies the application of virtual technology in new media, combining the characteristics of the two, and exploring the necessary factors for their combination; through the analysis of the model, the possibility of combining new media and virtual technology is discussed.

Yunyue believes that virtual distributed processing unit (DPU) technology can realize the dynamic mathematical model simulation of distributed control system (DCS). This software function is similar to low-cost production. Therefore, this technology is suitable for production enterprises in personnel training, online testing, design and debugging, and fault diagnosis [1]. In order to develop a new technology for data analysis and caching, Bai proposed a virtual cache and real-time data distribution technology. As a new business computing service model, users can obtain information services anytime and anywhere through cloud computing. The cloud computing data centre has thousands of physical nodes. However, with the expansion of cloud computing, the inherent dynamics of the system and the complexity of management have gradually increased. A heuristic cloud computing data centre resource management method is proposed to reduce energy costs and ensure customer service quality [2]. Li
believes that in the context of the rapid development of the computer industry, with the widespread application of virtual technology, China’s information technology has made great progress. However, sports information teaching is still at a low level. The application of information technology in physical exercise has become a big problem and needs to be improved [3]. Yao believes that virtual instrument (VI), as a widely used technology in the field of test and measurement, combines high-performance modular hardware with flexible software to perform various experimental tasks. In order to test the sound field in the laboratory, a VI-specific platform was constructed. [4].

The innovation of this article is that the environment presented based on virtual technology has artistic beauty and can change the picture according to artistic needs. The advantages of technology are also revealed through new forms of expression. The interaction between this technology and art constantly impacts people’s aesthetics.

2. Virtual Technology and New Media Art

2.1 Virtual Technology
Virtual reality is a virtual environment based on computer technology that integrates vision, hearing, and touch. The user communicates with objects in the virtual environment through some special instruments. Such instruments will make these objects more vivid so that the user will have a more realistic experience [5]. Virtual technology is an emerging technology that performs image display operations when computers interact with complex data, and requires the support of software systems and hardware devices [6]. The five main characteristics of virtual technology include: immersion, which refers to the degree of authenticity when the user appears as the protagonist in the virtual environment; interactivity, which refers to the natural level at which the user interacts with objects in the virtual space and the responsiveness of these objects to user operations; conceptuality, which means that when users are immersed in a virtual environment, they can obtain information around them by using their own sensing ability and cognition level to the strange environment; multiple perception ability, which refers to people’s visual appreciation of ordinary art design; autonomy, which refers to the degree to which objects play a role in the virtual environment according to the laws of nature [7].

2.2 New Media Art
New media is to spread information through digital TV technology, network technology, TV, computers, etc., to provide users with services such as video, voice data, online games and distance learning [8]. Today, most of the new media art is based on a variety of technologies, using modern means such as information integration, network transmission, image synthesis, virtual reality, etc., which integrates technology and art [9]. The characteristics of new media mainly include: diversification, which means that the variety of artistic elements are fused together to present a new artistic form through different media; interactivity, which is somewhat similar to the interactivity in virtual technology. The art with interactivity is itself a representative of technology; virtuality, which refers to artists using advanced technology to show their works to people, using the unique features of virtuality to create new works of art that transcend reality, space and time; publicity, which means that people’s behaviours are magnified and commented through the Internet, and the artist’s work also comes into view through the media network. [10].

2.3 Combination of Virtual Technology and New Media
In recent years, virtual technology and new media have been hot topics discussed by many scholars, and their development has brought tremendous changes to our lives. The artistic effect presented by virtual reality technology is striking, and its interactive artistic expression also enables users to communicate with the work at a short distance, thereby generating a large amount of data information and saving time for market research [11]. Based on the multi-angle and multi-point total layout data, the conceptual diagram model of each building is established in the environment, and the positional relationship of the model group is given.
2.4 Stereoscopic Image Generation Algorithm

(1) Synthesize stereo images. Two cameras are used for simultaneous shooting, and the obtained images are integrated using stereo glasses to make them stereo.

(2) Stereo perspective projection algorithm. Use the parallax of left and right eyes and the principle of perspective projection to generate a stereoscopic image. Using the projection centre as the coordinate origin, a left-handed coordinate system is established. According to the related properties of similar triangles:

\[
\begin{align*}
(X_o - 0)(X_p - 0) &= Doe / Dpe \\
(0 - Y_o)(0 - Y_p) &= Doe / Dpe \\
X_o &= X_o * Dpe / Doe \\
Y_o &= Y_o * Dpe / Doe \\
X_p &= (X_o + E/2) * Dpe / Doe - E/2 \\
Y_p &= (X_o - E/2) * Dpe / Doe + E/2
\end{align*}
\]

(3) Correlation stereo image generation algorithm. First calculate a view, and then calculate another view according to the correlation between the left and right eyes, so as to obtain a stereo image.

2.5 Database System Modelling

The elements and functions in the database are defined by the user and the designer, and both parties can add, delete, modify, and search. The data model assumes that different roles are assigned and calculated for different levels of multimedia data. It includes the dynamic and static functions of the data elements in the database, and can be used as the basis for developing the corresponding tools required to use multimedia data [12]. According to the position of the model’s name in the real space, three-dimensional coordinate points are used to represent the positional relationship of objects in the virtual space [13].

3. Application Experiment of Virtual Technology

3.1 Experimental Principle

The virtual simulation in the data consists of three parts: data input, data analysis and virtual simulation. Among them, the third part of the work has been completed in the main thread. Each thread needs a secondary buffer to update data in real time to ensure data connection. The first level is the public area where data is exchanged during the data supply process; the second level is the data user area that ensures real-time data updates.

3.2 Experimental Development Platform

As shown in Table 1, it is the machine-specific configuration used in the experiment.

| Table 1. Development platform configuration |
|--------------------------------------------|
| **Hardware platform** | Personal PC |
| | RAM:4GB |
| | Graphics card:8600SE |
| **System environment** | Operating system:Win7 |
| **Browser plugin** | BT-ConVRML-63 |
| **Development tools** | Website development tools:Dreamwaver,3DSMAX |
| | Image processing:Photoshop CS |
| | Sound processing:CoolEditPro2.1 |
3.3 Experimental Procedure

1) Prepare two buffer layers, one is called the common buffer A layer, which can put down 1000 data strips; the other is the circular buffer B layer, which can put down 20 data strips.

2) When the P line is sent for the first time, 1000 data are read and loaded to the A layer at the same time; when the Q line is sent for the first time, 20 data from the A layer are sequentially taken out into the B At this time, read the file and start working, and complete the data in A.

3) Analysis and simulation of layer B data.

4) Repeat the above operations after the work of layer B is completed, until all the data is processed.

5) The receiving end should receive the data stream from the sending end within 10 seconds. It is specified that the data stream can transmit 300 data packets per second, each of which is 600 bits, and the data bandwidth is 0.81 Mb/s.

6) The sending end first transmits the data to the virtual port server, and then the server transmits the data to the router port, and then sends it to the receiving end.

4. Discussion and Analysis of Experimental Results

4.1 Analysis of CPU Computing Power of Virtual Machine

When the CPU ratio is different, the calculation rate of the virtual machine is also different. The gap between the ideal and actual value of the CPU’s computing power stems from the intervention of the virtual machine on the same computer.

As shown in Figure 1, when two virtual machines are used for a computer host, the CPU load of the virtual machine is slowly decreasing, because the configuration of the computer is dual-core. When the CPU load of all virtual machines adds up to more than 300%, the reduction rate rises sharply.

![Figure 1. Computing power test](image)

As shown in Figure 2, if only two virtual machines are integrated, when the load rate of each virtual machine is as high as 100%, the power consumption of the host server also reaches a peak of 80w. At this time, the power consumption of the server depends only on the CPU load rate and has nothing to do with other factors. In order to keep the environment unchanged, in order to increase the CPU load, two servers need to be equipped, each of which consumes about 45w of power. At this time, the total power consumption is expected to be twice that of the integrated virtual machine.
4.2 Analysis of Virtual Computer Overlay Network Model
The main reason why decentralized users can safely access their private applications anytime and anywhere is the coverage of the virtual network. It is located above the IP layer of the network and is used by specific user groups, which guarantees the security of the network. The virtual network can be adjusted to an adaptive dynamic topology set, and its equipment can be rewritten as needed, so the virtual network has a strong flexibility. The advantages of the devices used in the virtual network are: (1) Less hardware consumption. On a host server, it can perform multi-threaded operations at the same time; (2) The program is editable. Reduced the difficulty of network management; (3) Save manpower and material resources. Even if the network structure needs to be changed, it can be easily operated, and the layout of the hardware device needs a long time to complete.

4.3 Interactive Visualization Analysis of Virtual Technology
In the virtual environment, people and things, and things and things react to each other. Their interaction in the environment will generate different results and deliver them. The platform will process various input of the terminal and output the feedback result, so as to present the corresponding scene for the terminal. There are currently two situations in the human-computer interaction generated during the operation of the platform: one is that the user selects things or behaviours in the virtual space question through the terminal device, and the other is to find the direction and position through the terminal device. The data in the virtual reality system are all existing data types, mainly for managing text data and binary data.

4.4 Virtual Simulation Crowd Model Analysis
As shown in Table 2, according to the cluster data set crowd moved to different locations. Mass simulation is a simulation of the movements and actions of most individuals in public areas, and its complexity varies depending on the simulation scenario. After the process starts, start the calculation thread and prepare the initialization data to calculate the cluster, including the number of cluster groups, the number of people in each group, the initial position of individuals, the position of static obstacles, etc. The communication of the cluster’s action data between the two threads is based on two levels of ring buffer memory. The first level of ring buffer memory can hold 50 frames of cluster data, and the second level of ring buffer memory can hold 10 frames of cluster data. The first reading of the first-level ring buffer must read 50 frames of population data at the same time. After that, the population data is updated sequentially with 10 frames of human data each time, and the population data of the boxing driving range of the second level is initially read from 10 frames of human data, and then updated every time with 10 frames of human data.

| Table 2. Boundary location data |
|-------------------------------|
| X coordinate(m) | -402 | -369.55 | -298.155 | -279.456 | -369.123 |
| Y coordinate(m) | -47.501 | -5.26 | 29.478 | 65.148 | 10.589 |
As shown in Figure 3, the density of the crowd moves as the set value changes, and obstacles also affect the direction of movement of the crowd.

| X coordinate(m) | -229.102 | -180.25 | -129.3 | -140.26 | -70.054 |
| Y coordinate(m) | -439.122 | 170.4 | 201.22 | 251.02 | 280.26 |

As shown in Figure 4, the relationship between the occupancy of all the router storage capacity on the virtual server device and the number of routers is as follows. At the technical level alone, the virtual server manages the confirmation of user information and the resources required by the user. The unified management of user basic information is to standardize user registration, activation, password setting and other work. Resource management refers to storing the data and information required by the user in the use process in the database system. When the user has a demand, the server will send it in a distributed manner. The storage space occupied by routers on each server averages 1.5MB. It can be seen that 1G of storage space can accommodate the simultaneous transmission of information by 500 routers. When the number is increased from 2 to 20, the data packet is only lost by 0.5%, and the network speed is only reduced by 0.3ms.

5. Conclusions
This article mainly studies the application of virtual technology in the field of new media. One of the most common features of virtual technology and new media is interactivity. The interactivity of virtual technology allows people to interact with fictitious things, and the interactivity of new media is that people can see vivid pictures more intuitively. Once these two interact, a wonderful chemical reaction
will occur. People not only enjoy the beauty from the visual, but also can touch the world of the artist, which undoubtedly adds a lot of fun.

Virtual technology has quickly become a hotspot for people’s research due to its unique nature. The beautiful virtual environment created by it allows people to communicate with art in depth. The scope of influence of virtual technology is gradually expanding, which has a great influence on our way of thinking. When virtual technology is applied in the field of new media, art will become more three-dimensional, and virtualization will surely become the theme of future development. This article focuses on the application of virtual technology in the field of new media. By establishing a new media database model and combining the interactive functions of virtual technology, the necessity of integration of virtual technology and new media is proposed. The data shows that 300 packets are sent per second, each packet size is 600 bites (these can be set in the configuration file), the bandwidth of the transmitted data is 0.81 Mb/s, and the upper crosshead model is obtained. The results show that many functions of virtual technology are applied in the field of new media.

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