

Research on Product Display Based on VR-Platform Platform

Shouqian He

Guangdong Polytechnic of Science and Trade, Guangzhou, Guangdong, 510430, China

Keywords: Virtual Reality; VR-Platform; Product Display

Abstract: Product display design is an important part of current industrial design. It belongs to the interdisciplinary research field. At the same time, it is affected by many factors such as economy, technology and so on. In the process of exhibition design development, it is influenced by the level of economy, science and technology, art and so on. Therefore, the emergence of virtual reality technology has greatly promoted the transition of the product display stage, changed the traditional marketing method, and optimized the marketing decision. This paper combines virtual reality technology and some related theories of display, and adopts examples to realize the import from 3D modeling into VR-Platform platform, and finally realize virtual interactive display.

1. Introduction

Industrial design is the product of the combination of technology, art and economy after the industrial revolution. In the 1920s, in order to seek the practicality and aesthetics of industrial products, a multidisciplinary knowledge blending, comprehensive and emerging design discipline with industrial product development and design as the main object was gradually formed [1]. Product display, as the name suggests, is that manufacturers display products to customers or users in various forms, so that they can understand the natural and functional attributes of goods, in order to achieve the sale and purchase of goods [2]. Therefore, product display has a great connection with marketing. It can be said that product display is the core of marketing. Virtual reality technology is a combination of computer technology, multimedia technology, computer image graphics technology, human-computer interaction and other disciplines. It is one of the most representative achievements. The virtual world created on the basis of human-computer interaction theory can be integrated with their surroundings to achieve real-time effect [3]. The surrounding world and objects can be directly observed by people, and in this process, they interact with objects in the virtual world naturally. The application of virtual reality technology and interactive technology [4]. It can realize three-dimensional modeling and support the realization of demonstration interactive experience by interactive design, thus reducing costs and greatly shortening the development cycle. At the same time, it also lays a foundation for improving the scientificity of decision-making.

2. Overview of Virtual Reality Technology

Virtual reality technology is also known as spiritual realm technology, which refers to the representation of objects in the objective world by means of electronic simulation, and the creation of such an artificial environment as virtual reality. This kind of environment can exist objectively or ideally. Users can create the feeling of immersion through the exchange of sensory and computer simulation, so that they can observe all kinds of simulation things in the environment at will in the virtual environment [5]. This technology integrates digital image technology, graphics technology, multimedia technology, sensor technology, human-computer interaction technology and other technologies, thus greatly promoting the rapid development of computer technology [6]. Its evolution provides a new interface tool for the development of intelligent engineering. It has opened up new research directions for the application of human-computer interaction; it has opened up a new description method for data visualization of various large-scale projects. With the use of virtual reality technology, the goal is to create a realistic and immersive experience in a virtual world with

a realistic environment. Focus on the environment that is difficult to distinguish between true and false [7]. As a systematic technology, it can't consider the problem from one aspect like a single technology. It needs to solve all the problems as a whole, so as to pursue the optimization of the overall system skills.

3. Methodology

In the field of display design. Virtual reality technology is mainly used in product display, architectural display, cultural heritage display, interior design display, visual display, etc., and is also applied in the fields of entertainment, art, manufacturing, medicine, education and training. Product design depends on the visual image. From the external space modeling to the internal text and graphic content, to the display of the carrier, materials and equipment, the visual communication effect is good or bad, which directly determines the exhibition. The amount of information and psychological feelings people get in the meeting. Any display design should conform to the basic principles of display design, satisfy the basic requirements of visual, content and formal beauty, and achieve the unity of content and form. It can not violate the above principles because of the change of display means. This technology can give people a very realistic feeling in the real environment, provide a human-computer interaction close to the natural environment, enable people to constantly deepen concepts, generate new intentions and imagination, calmly lead the search, exploration and acceptance of relevant information, change the traditional way of passive acceptance of information.

The core of the application of virtual reality technology in product display is to find a reasonable and appropriate form so as to find the characteristics of virtual display in computer. Only by continuously combining the product display features and the virtual reality technology features can the product display characteristics in the virtual environment be well determined. As shown in Figure 1.

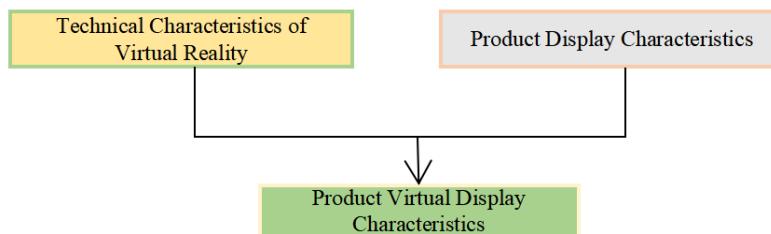


Fig.1. Product virtual display feature generation

System requirements analysis, mainly to determine the function of the product virtual display system based on the user requirements and the virtual display characteristics of the product, to analyze the specific system requirements for specific products, and to set the corresponding functions of the product virtual display system according to actual needs and technical conditions. According to the nature and characteristics of the evaluation object, the purpose and requirements of the evaluation to select the appropriate evaluation method. An understanding of the evaluation method and an analysis of the actual problem are the key to selecting the evaluation method. To ensure that it is based on the use of virtual reality technology. It can realize the perfect construction of the VRP platform and promote the interactive and real-time features of this display platform. Then the design of scene model needs to be realized by three-dimensional modeling program. Color is an indispensable element in any design, especially in the visual image to convey information display activities. It acts on people's eyes together with shape and volume, and causes people's different psychological reactions by changing the degree of stimulation to people's eyes. In the process of building the database structure of three-dimensional scene model, it is necessary to build the three-dimensional entity model on the basis of perfecting the preparatory work, and then carry out post-processing to realize the formation of the integrated model, and render the corresponding model.

Based on the real environment, the relevant information will be collected in an all-round way, and on this basis, the data information will be collated and analyzed to get the data used in the modeling. On the construction of appearance model. From the technical level, VR technology is a high-level experience of human-computer interaction, which simulates human visual, auditory, tactile and even taste sensory functions. Therefore, not every product can meet the display purpose and demand by using the same or the same type of display form. Starting from the characteristics of the product itself, set clear display goals, and select the corresponding display content according to the needs of the display task. Dynamic display often comes in combination with static display. Generally, manufacturers will continue to attract customers' attention through dynamic display with short-term and high cost, so as to continuously stimulate the interest of customers. The hardware environment is mainly computer and sensing equipment, and the software environment is various software for system development and application. Developers should analyze the development environment of the product virtual display system based on user needs and technical requirements.

4. Result Analysis and Discussion

People's visual perception depends on light, no light, the shape, color, volume, etc. of the object is meaningless. In the exhibition activities, people's feelings about the exhibits and space mainly depend on the reflection of the light reflected by the exhibits and the materials that make up the space. With the combination of mobile devices and virtual reality technology, mobile learning and autonomous learning have become a reality. The advantage of virtual display is that the shape can be reproduced in the virtual space and time of the computer and displayed in the form of graphic images or virtual imaging. Multimedia display is a supplement to these two kinds of display based on static display and dynamic display. The cost of input is relatively high, and the form of advertisement is a popular display model. The static virtual display of products is realized by three-dimensional screen shots, the dynamic virtual display of products is realized by three-dimensional effects, and the interactive virtual display of products is realized by sensors. Therefore, the establishment of three-dimensional virtual display model of products is the most reasonable. It can set off the image and texture of the product, reflect the quality of the product, highlight the information, affect people's vision, trigger people's psychological reaction, and accurately convey information.

Color is people's first impression of the object, and then the shape of the object. Color belongs to the category of appearance material. It is an important task of virtual display to express the material of mechanical products and show their charm. The system is developed in the process of dynamic feedback adjustment. The established three-dimensional model or three-dimensional virtual environment should conform to the characteristics of the product, be able to truly express the essence of the product, and be convenient for users to observe the product. The design process is always accompanied by a large number of evaluations and decisions, but in many cases we are unconsciously evaluating and making decisions. As design requirements become more complex, just relying on experience and intuition to guide design is no longer adapted to the requirements of the times. Due to the use of space, time and motion elements in the exhibition environment, which produces a four-dimensional representation, the intervention of modern technology represented by multimedia makes the display design change from static to motion, and its display effect is also passively accepting the transition to active acquisition.

5. Conclusions

In summary, based on the application of virtual reality technology, the display design can be used to realize the creation of realistic display effects by using the VR-Platform platform, and the user's sensory enjoyment and comfort can be improved by integrating the interactive design functions. The emergence of virtual technology has led to the development of our design towards creative and diverse changes. Under the premise of the rapid development of virtual reality technology, the designer found this "new sky." In the process of actual design, it is necessary to

collect and organize data and optimize scenarios on the basis of clear modeling principles and technical routes. On this basis, interactive design is realized after rendering and baking the model. Virtual reality is a new mode of human-computer interaction, and its development prospects are very attractive. It is a new technology with far-reaching potential application direction.

References

- [1] Huo Q Y, Zhang H C, Ma H, et al. VRViewer: A Cloud-Based Virtual Reality Platform. *Advanced Materials Research*, 2013, 756-759:1377-1381.
- [2] Pappas M, Karabatsou V, Mavrikios D, et al. Development of a web-based collaboration platform for manufacturing product and process design evaluation using virtual reality techniques. *International Journal of Computer Integrated Manufacturing*, 2006, 19(8):805-814.
- [3] Li H, Pan J H. Research in Wellbore Display Platform Based on Virtual Reality. *Applied Mechanics and Materials*, 2013, 347-350:2910-2914.
- [4] Pouliquen M, Bernard A, Marsot J, et al. Virtual hands and virtual reality multimodal platform to design safer industrial systems. *Computers in Industry*, 2007, 58(1):46-56.
- [5] Ginnis A I, Kostas K V, Politis C G, et al. VELOS: A VR platform for ship-evacuation analysis. *Computer-Aided Design*, 2010, 42(11):1045-1058.
- [6] Sharples S, Cobb S, Moody A, et al. Virtual reality induced symptoms and effects (VRISE): Comparison of head mounted display (HMD), desktop and projection display systems. *Displays*, 2008, 29(2):58-69.
- [7] Pouliquen M, Bernard A, Marsot J, et al. Virtual hands and virtual reality multimodal platform to design safer industrial systems. *Computers in Industry*, 2007, 58(1):46-56.