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The Study of Laying out Virtual Production Based on Cult3D

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Abstract

EC is regarded as the wonderful way that retail enterprises sell its goods. Then it is not enough to absorb customer that picture and text are used in laying out merchandise. With the development of Web3D technology, In this paper, both Cult3D and Network management are applied to realize the function of displaying products in 3D condition, which take full advantages of network's share and cult3d in interactive, file size and picture quality. So that customer can learn more about the product by interactive and personal need is satisfied by feedback information.

Index Terms: Cult3D; 3D interactive; Electronic Business

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1. Introduction

With rapidly developing of the network information technology and spreading of internet on commercial enterprises, on-line shopping centers and other e-commerce technology have been widely applied. Meanwhile, the display technology of good becomes essential [1], and most e-commerce sites display production by images and text description. However, it is limited to get more true information only by static picture and text. Three-dimensional (3D) dynamic promotional merchandise bring us a new way to solve it that the goods can be interact with user by dragging the mouse on realistic 3D dynamic model. This paper studies how the Cult3D technology was used to address the issue of commodity 3D dynamic display.

2. Web 3D graphics

With the development of computer graphics, virtual reality(VR) technology has been rapid development. Through computer simulation of real-life scenarios and interactive features, VR will enable people to have a feel of the true feeling [2]. Operating environment of virtual reality technology with the development of computer technology to achieve a migration from the graphics workstation to the PC. Meanwhile, with the development of network technology makes the Web3D technology into new research and development, it can meet the multi-user three-dimensional space of interaction in the network, the network is a good example of

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three-dimensional game, in addition to the network commodity display, Digital City Network applications of virtual exhibition. Web3D technology to solve the key problem is that transmission speed and quality performance of the contradiction between, that is sufficient network bandwidth to the existing permitted as far as quickly as possible to users with high quality three-dimensional effect, and can dynamically interaction.

Web 3D solutions include Flash, Java, Viewpoint, Cult3D, VRML, and Atmosphere and so on. Flash and Java which is more suitable for development of 360-degree panoramic effect. Viewpoint is similar with Cult3D in performance and interaction, but the latter has a better development environment and efficiency. Atmosphere is used directly in the Viewpoint Technology. VRML technology is the first virtual reality technology and VRML 1.0 was released as the ISO / IEC International Standard at the Second World Wide Web Conference held in Chicago in October 1994, which is a object-oriented computer language, like as HTML. Because the VRML model data is directly saved in text file format, high-definition display object needs large file sizes. While the need for real-time network transmission, VRML technology may not be optimal and is not flexible in interaction design [3]-[5]. In a word, the Cult3D technology is currently the best solution on Online three-dimensional display of merchandise.

3. Cult3D technology

Cycore Cult3D is launched by the Swedish streaming 3D technology, it does not follow the VRML standard [6], instead of using Java technology to achieve its goal of Web3D. With a good cross-platform Java performance, Cult3D object in most of the system platform and web browser display smoothly, and does not require special hardware support.

Cult3D has advantages on file size, picture quality, dynamic interaction, and so on. Firstly, advanced compression technology and independent support for multiple shadows, textures and bilinear filters are used to decrease file size, to improve download speed, and to ensure good picture quality. Secondly, dynamic interaction design does not require specialized programming knowledge, because Cult3D Designer has graphic and personalized programming interface. We can achieve functional complex interaction events only by dragging the icon and connecting the line between icons. In addition, the advanced interactive development can be completed through Java-based package(Cult3DDevelop.jar).

4. Cult3D design method

The process of development of Cult3D display was shown in Figure 1. The first step is to create three-dimensional model and export a C3D file. Then it will be imported into the C3D Designer for interaction design as a C3P file. Finally co file can be released into dynamic Web pages. Sofa-bed was used to introduce Cult3D display solution.

4.1 Functional requirements

3D Sofa-bed display requirements are described as below. Clicking the back, the sofa will extend to become into bed, and handrails will be moved to the middle as pillows. Clicking again the back, it will revert to the sofa. Keeping the left button hold down and dragging mouse, the sofa bed will undergo a corresponding rotation.

4.2 3D Modeling

Preliminary 3D model can be created in AutoCAD, 3DS Max or Maya, which is compatible with Cult3D and has export

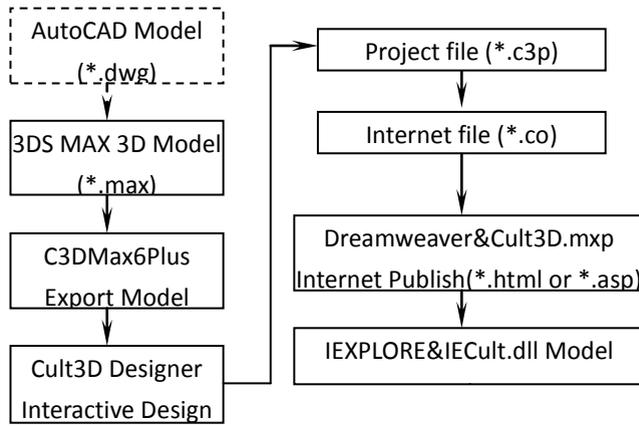
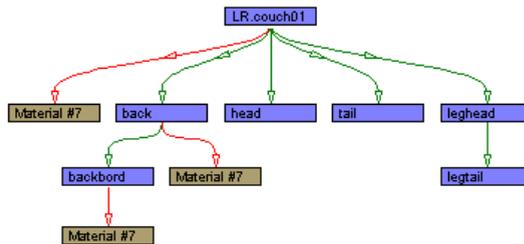


Figure 1. Procedure of Design

plug-ins(3DS Max Plus and Maya Plus). In this paper, the most popular 3DS Max was selected as a modeling tool(Fig. 2 a), whose role is to complete the lighting, texture mapping and material parameters such as rendering settings, then to export C3D file with model, view, sound, texture, texture mapping, light overall movement and even basic animation effects. It should be noted that the geometric entities of the inheritance and Local coordinate location must be considered, which will affect the subsequent effect of interaction design(Fig. 2 b).



(a) Model

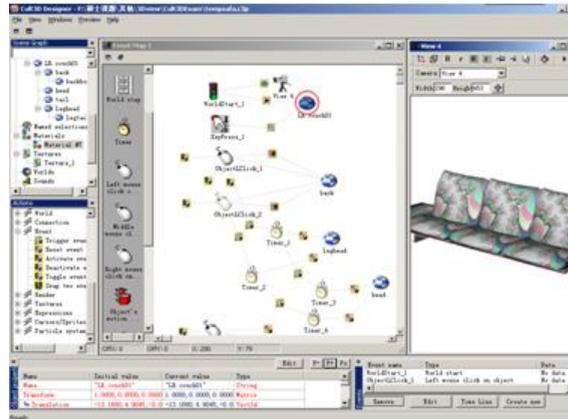


(b) Hierarchy of parts

Figure 2. 3DS Max Mode

4.3 Interaction Design

After the model was completed, the Cult3D Max_Plus was used to export a C3D file. When you want to export the animation, you should pay attention to both cases, the overall type or node type which will affect the size of the export file. Then the C3D file was imported into Cult3D interactive Cult3D Designer and generated C3P project file(Fig. 3). Cult3D Designer is a graphical G-language programming environment, so we can design interactive mode through functional connection between the icons that represent different events(Such as mouse click) and objects(Such as the back of sofa-bed) . Finally, we can obtain a CO file by saving as internet file.



Cult3D interactive designer

4.4 Web publishing

To browse 3D model online, we need to build a dedicated network management platform. Then, we can use Dreamweaver's Extension plug-ins Manager(Cult3D.mxp) to import CO files into website pages as ActiveX control object, like as Flash animation files for viewing. When the client visits a page containing Cult3D files at the first time, a player control will be automatically downloaded and installed. The final effect of sofa-bed is explored in the network, and we can control it by mouse click or drag(Fig. 4).

5. Conclusion

This paper show that the Cult3D display solution of virtual merchandise is very perfect. By the way, if retailers can show-case their products by this technology, the user will be able to intuitively understand the overall appearance and function of goods. It is very useful to enhance the competitiveness of their products. In addition, the virtual product model can be extend through the Java interface to exchange information with customer to meet individual needs.

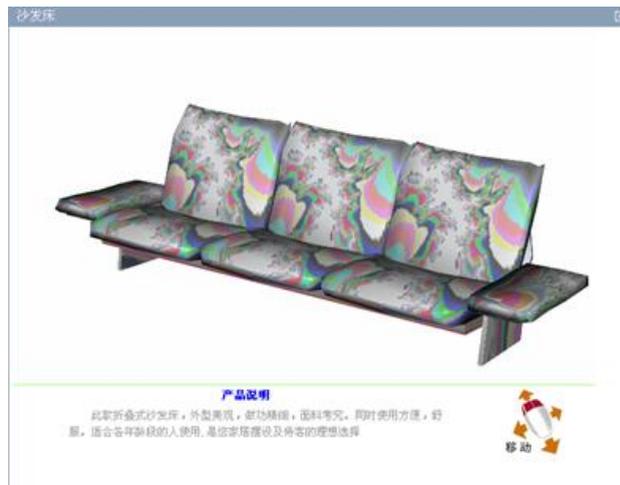


Figure 3. Final results

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REFERENCES

- [1] Tan Xueqing, Tzu-Ming and Zhou Dongru, “Personalized e-commerce shopping model”. Computer, vol.3, pp.147-148, March 2007.
- [2] Chen Zheng and Jian-Hua Gong, “A Java3D-based platform for collaborative virtual environments work”, Computer Applications, vol.08, pp.136-140, 2005.
- [3] Chen Xuelin and Chen Fengliang, “Virtual three-dimensional display of the core product realization”, Market Modernization, vol.27, 2008.
- [4] Fang Min, “Web3D technology development and application”, Xiangtan Normal University (Natural Science) , vol.24 (2), pp.65-68, 2002.
- [5] Ye Lin, “Virtual Reality Model mechanical drawing room set up”, Engineering Graphics, vol.3, pp.202-206, 2002.
- [6] Liu Yun, “Growth. Internet 3D Technology Web3D, [Http://www.yesky.com/SoftChannel/72351167954812928/20021127/1641818.shtml](http://www.yesky.com/SoftChannel/72351167954812928/20021127/1641818.shtml), 2002.11.28/2005.05.01.