

# Quest3D Technology in Landscape Design

**Hongjun Chen**

*Hebei University of Engineering, Architecture College, Handan, China*

Corresponding author is Hongjun Chen

## Abstract

The application and influence on landscape increased broadly. Quest3D is one of the important software to realize the virtual reality technology, taken a design of classical courtyard as an example and developed landscape roam system combined with Quest3D, and the advantage and disadvantage of Quest3D were described from the aspects of the selection of Quest3D technology and software and hardware the establishment of basic process.

Key words: VIRTUAL REALITY TECHNOLOGY; GARDENING LANDSCAPE DESIGN; 3DSMAX; QUEST3D

## 1. Introduction

Digital Age's arrival, caused the urban planning design, the architectural design and the landscape architecture design has had the revolutionary change. Computer-aided design has been gone deep into the design process from beginning to end. Computer-aided design gives the designers endless images, at the same time the designers are able to deliberate their works to be more perfect and reasonable with the help of computer-aided design [1].

Quest3D technology, like network, is one of integrated information technology which have risen at the end of the 20th century. The 3D technology has integrated the latest technology developments of computer Graphics, multimedia, artificial intelligence, multimedia, networks, parallel processing. Its real-time performance of 3D space capabilities, the operating environment involved in man and computer and bring the "personal experience" feeling, bring a change in the past interestless, rigid and passive conditions between man and computer, and make human explore and study the micro-macro world greatly facilitated [2].

The application of Virtual reality technology for landscape architecture design, provides strong sup-

port for us to observe the characteristics and behavior of the objective world. It can inspire designers who have interaction with the multidimensional information of environment and it can deepen their emotional and rational understanding, which can generate new creativity. The interaction with the multidimensional information of environment, can enhance the scenic landscape creative means and in the quantitative and qualitative integrated master environment [3], emotional and rational understanding can be gained, consequently deepening the concept and expanding creative thinking ways. Although virtual reality technology is currently in the application in landscape garden design only for the exploration period, with the development of the technology, its impact on the landscape garden design will be even greater.

Virtual Reality is also a kind of Computer-aided 3D MAX technology which is not alike other aided technology, regarding landscape architecture design, its advantage is mainly embodied in aided conceptual design and conceptual expression. Using 3D at the process of conceptual designing, the experiencing of place will be more interactive and intuitional, the realness of place will be more embodiment as soon as possible. So it will give the designers a new path to

create the concept, grasp the place, compare with different concepts, weigh the advantages and disadvantages, so the concepts will be more perfect and reasonable. At the experience of landscape architecture, the technology of 3D synthesize many advantages of the old manifestations. It has the iconicity, the vitality and authentic. The decision maker and the public are able to done to scene, understand and sense the design purpose of the designers multiangly with the help of VS. this article will deep to study the aided effect when using this technology to landscape architecture, and the Operation Mode.

## 2. Related works

### 2.1. Virtual Reality Technique

The virtual reality technique has extensive purposes in the city scenery, It mostly can be divided to: The first, establish the virtual geography environment, make the professional scholar as the geologist in virtual geography environment, contact with virtual environment vivid and creationary, establish the information communion and alternation with each otherthe of valid information diagram and the person's sense of vision mutually and carry on the knowledge excavation [4]; The second, assist in the programming design, especially the city earth's surface sight display has more remarkable advantage; Not only can convert different scene real time according to the public need, but also can modify design program scene and attain the superior design rapidly;The third, release through the network, the earth's surface scene can be used for drumbeating and the popularzation education of sciences better; the fourth, In virtual city environment, carry on the urgent circumstance training, for the disaster prevention and handle the service ;The fifth, used for the the industry and agriculture design and construction service as industry construction, water conservancy exploitation etc.

### 2.2. Low-cost Landscape Architecture

With the fast-developing social environment and the advancing research in subject areas, landscape architecture has been extend from pure aesthetic art works to necessities for the public, which has to meet the demands of aesthetics, sociology, ecology and culture. However, in backward areas, local governments may not be able to afford the construction and maintenance of landscape architecture projects. Due to recession, even some developed countries and areas are in a shortage of funds to do so as well. Such phenomenon has seriously affected on social equity and civil liberty. This paper aims to explore the strategies of low-cost design with insufficient construction and maintenance funding on urgent public demand [5-6].

## 3. Establishing 3D scenes in 3DS MAX

Firstly, models of all elements in the scene should be made according to design schemes, corresponding texture mapping added, then lighting for the whole scene, and finally the lens type and location of free camera should be determined according to the set horizon and height of sight point. It can be known that the procedures of establishing scenes of virtual reality environment are similar with those of making scenes of rendering map, with different focuses. The former pays more attention to the flowing movement and spatial impression of real}ime browsing, but the latter needs rendering effect of static graphics. Therefore, the following requirements should be satisfied in establishing virtual reality scenes: ①Under the premise of satisfying vision requirements, plane amount of the model should be reduced to the least, which can be achieved by using the Optimize in 3DS MAX after the completion of model. ②Using Instances Copy. Instance is the duplication of object, while any of these copies is changed, all others will be changed correspondingly. ③Those non}iominant objects are not strictly required in details, "simulated"boxes are suggested, for example, surrounding constructions can directly be made by "box+maps". ④Maps are not necessary to be too precise or elegant, those of compressed jpg format are the best, which should be in their least sizes to decrease the downloading time. ⑤ All used maps should be put into one content, because Quest3D can only search one designated content. ⑥ Because light effects like global light, reflected light and shadow can not be used in Quest3D, thus can only be supplemented by lighting techniques. In addition, each corner of the scene should be exposed to the light(because any corner is possible to be browsed as the virtual reality scene is finally browsed). ⑦Free camera is set in 3DS MAX to determine horizon and height of sight point, which will help establish the model and demonstrate the final rendering effect. However, scene browsing in Quest3D is finished by camera, and different cameras in 3DS MAX can not be used in Quest3D, thus the general camera behind the scenes should be deleted first before being imported into Quest3D.

Therefore, the designed terrain can be processed into a gray image by Photoshop, then added on a plane as the map by using Displace in 3DS MAX, the expected terrain will be obtained (Fig. 1-2).

LOD technology can be used to decrease faces of plants and apply more solid plant models (Fig. 3).

Quest3D is a powerful real}ime graph rendering engine invented by Company of for industrial or game use. The most outstanding feature of such a technol-



Figure 1. AEC Expansion of the Plant Created

Name	Scientific Name	Type	# Faces
Generic Tree		Tree	5000
Banyan tree	Ficus benghalensis	Banyan	100000
Generic Palm	Palmae philimus	Palm	7500
Scotch Pine	Pinus sylvestris	Pine	60000
Yucca	Yucca mohavensis	Yucca	2100
Blue Spruce	Picea glauca	Spruce	19500
American Elm	Ulmus americana	Elm	19000
Weeping Willow	Salix babylonica	Willow	42000
Euphorbia, Large Succulent	Euphorbiaceae	Euphorbia	50000
Society Garlic	Tulbaghia violacea	Garlic	7000
Big Yucca	Yucca mohavensis	Yucca	15000
Japanese Flowering Cherry, Spring	Prunus serrulata	Cherry	40000
Generic Oak	Quercus philimus	Oak	24000

Figure 2. A Few Patches of Plants of AEC Expansion of the Plant Created

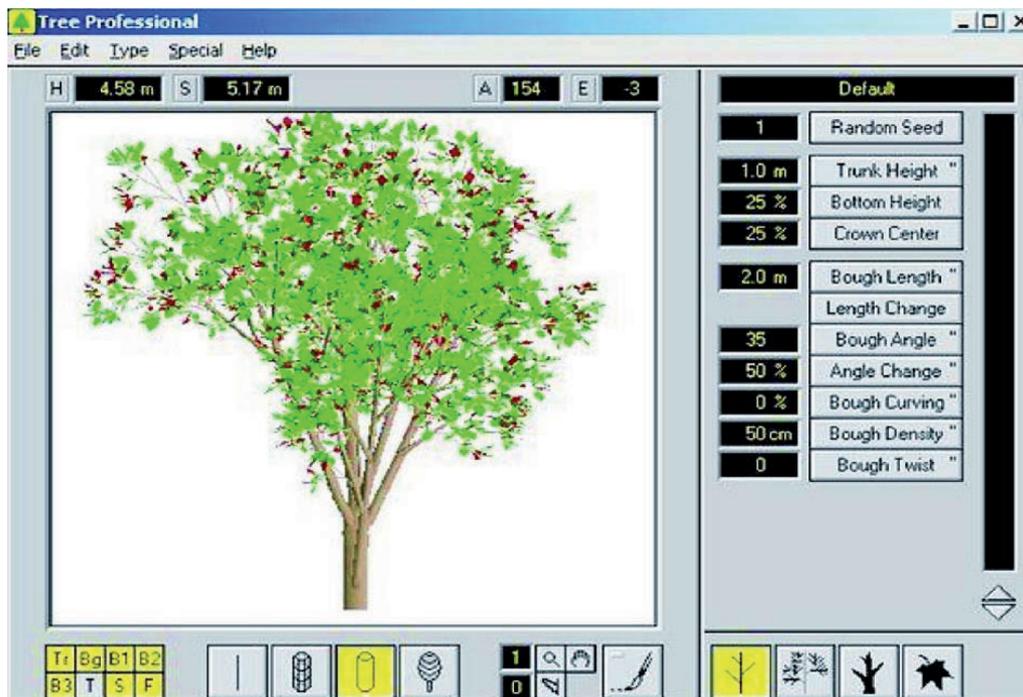


Figure 3. Tree Professional Plug

ogy is by packaging numerous canonical functions into a “Channel” to ensure that designers can focus on the development of virtual reality system through applying the real “block building” programming. The whole set of engine consists of 3 dominant parts: editor, browser and the landscape wall meet the basic function of the space division, is also carrying an

important carrier of the local culture. How to create space landscape of a wall, make the whole garden public space more closely related is important. How to improve the regional features of the landscape wall is worth studying. The garden planning of Minnan influenced from the Chinese traditional thoughts, garden planning connecting with the foreign cul-

ture. Their own independent design methods, make the landscape wall be reflecting the stage of the local culture. But with the development of the city, the construction of new buildings and roads destroy the traditional landscape wall, many historical protection value landscape also be destroyed injured all over the body, cause local culture disappear. Based on the landscape wall of Minnan region as the research object, in a large collection of information and field survey, on the basis of multi-disciplinary knowledge, from the landscape design study, ecology, morphol-

ogy, building space theory, open space theory, analyses the landscape wall.

3DS MAX can be logically connected by various “Channels” provided by Quest3D, and each Channel has its specific function and logical sequence. According to different Channel selection, logical sequence and parameter setting, diversified interactive effects can be created, surely various kinds of special effects and flashes can be realized, for example, establishing and controlling camera, halo effect of sun, garden plants and background music(Fig. 4-5).

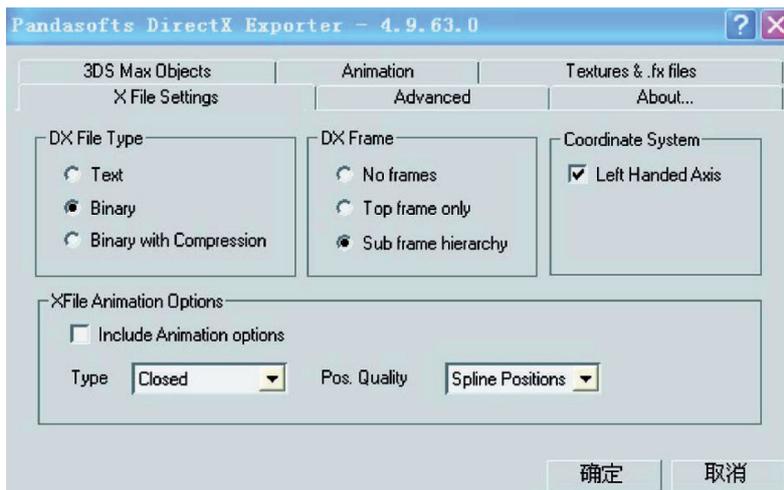


Figure 4. .X file output options

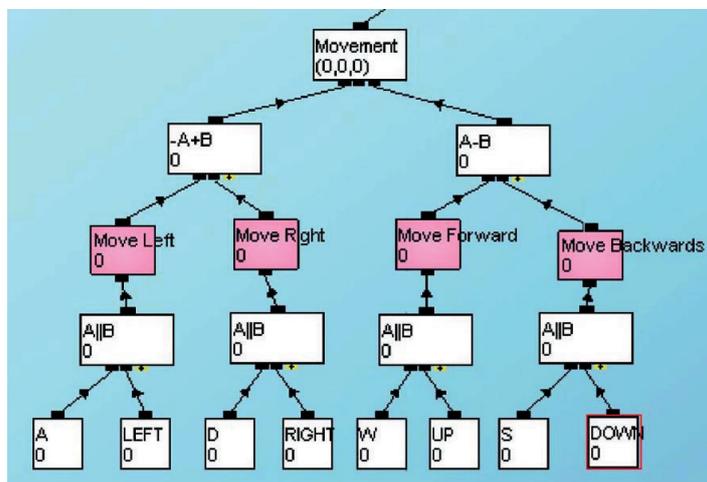


Figure 5. Walk Module Settings of Eamera

By creating\*.Q3D that can be played by Quest View according to the requests or issuing the independent application program\*.EXE, finished Quest3D files or .EXE files can be directly run for browsing, viewers will feel as they are rightly on the scene by controlling roaming direction with mouse or keyboard.

### Conclusion

In this paper, scene modeling is finished in 3DS MAX, and then is converted into Quest3D files. In the

study, garden models are classified and their modeling means are respectively studied, interactive effects are created for the scene, and finally the application of Quest3D technology in garden design is realized through browsing virtual reality. 3D models created by computer consist of various faces, and the more complicated the model is, the more faces there are, and the higher requirements on the computing speed of computerise. The common design elements in garden land scapes are always irregular ones, such as plants, changing terrain, water bodies and so on, thus

are complicated if being expressed in models, for example, thousands of leaves on a tree will have millions of faces in models, as a result, operational speed of the software will be greatly reduced if these complicated garden models are imported into Quest3D, and then the expected effects or virtual roaming will hardly be realized. Therefore, to achieve high simulated or artistic effect of garden landscapes in Quest3D, further studies are required to simplify the method of modeling.

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## A Layered Bayesian Network Intrusion Detection Algorithm

Wang Xingzhu<sup>1</sup>

*Furong College Hunan, University of Arts and Science, Hunan Changde,  
415000, China E-mail: Wangxzhu@sina.com*

Corresponding author is Wang Xingzhu

### Abstract

Aiming at the problem that the network intrusion events frequently happen in the current internet era and the fallout ratio and omission ratio of the intrusion detection system are two high, it proposes a Bayesian intrusion detection algorithm based on the multilayer feature extraction of Gabor. First, aiming at the problem that the degree of accuracy of the Bayesian classification algorithm is low, the multilayer Bayesian classification recognition algorithm is utilized and combined to propose the Gabor multilayer feature extraction algorithm, and based on this