



The Design of Intelligent Tourism System Based on Virtual Reality Technology

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Abstract. Virtual reality technology is a rapidly developed technology in recent years, and has a wide range of applications. Virtual reality technology mainly generates a computer simulation environment, and uses relevant supporting facilities to help users to fully devote themselves to the environment, so as to realize the interaction between users and the environment. VR technology can make people accurately investigate or operate virtual world objects, provide various dimensions of intuitive natural feeling, is a collection of multimedia, artificial intelligence, network, computer graphics and other technologies in the latest technological achievements, the virtual reality technology applied in the tourism industry, will have a profound impact on the development of tourism. According to the current situation of virtual reality technology on tourism, this paper makes some discussion, and puts forward their own opinions on the current problems, aiming to improve the role of virtual reality technology in the tourism industry.

Keywords: Virtual Reality Technology · Smart Travel System

1 Introduction

With the rapid development of new mobile Internet technology, how to realize smart tourism has become a hot topic in the research of the tourism industry [2]. This paper puts forward the design idea of smart tourism system based on virtual reality technology, gives the design goal of smart tourism system, proposes the general design architecture of smart tourism information system, and analyzes the representation layer, logical layer and data layer of the system. Discuss the wisdom of tourism system function module, and analyze the key technology of the system development and design, the system test found to present the user stereo real tourist scenic area immersive experience, and can provide tourism service guidance, combined with the user demand to develop reasonable tourism routes, bring users very good wisdom tourism system experience.

2 The Development Situation of Scientific and Technological Innovation of Smart Tourism in China

2.1 Current Situation of China's Tourism Science and Technology Management System in China

There is no denying that China's strength is not bad, for example, the economy, in recent years has developed by leaps and bounds, and the political culture has been gradually improved. China also pays attention to the development of colleges and universities, established a number of tourism universities, and vigorously invested in capital construction, policy support, which also provides impetus for the development of tourism and tourism science and technology. And relatively speaking, colleges and universities will be more motivated and capable to develop tourism, because they are all facing vigorous students. Moreover, colleges and universities also have the right to train students' tourism ability. For example, many tourism universities in China will actively carry out tourism activities, such as the Tourism Science Society and other local tourism associations exchange. In addition, colleges and universities can also actively organize and carry out various tourism academic exchange activities and research projects. And this has also promoted the diversification of our society [8, 9].

2.2 Current Status of Tourism Science and Technology Talents in China

There is no doubt that China has become the world's most populous country, with a large population base, unbalanced development of population quality and difficult population management. However, even so, China still actively responds to this problem, using science and technology and education to deal with the problem of low population quality and unbalanced quality, and establish a complete education system, to give students a comprehensive knowledge transmission [1]. Therefore, China's talents gradually increase, and people's overall quality and quality and cultural level are improved accordingly. Through the national tourism data research analysis found that the current Chinese tourism system talent has more than 120,000 people, then the coaches have more than 30,000 people, including excellent sports personnel also more than 20,000 people, tourism professional and technical personnel also has about 30,000 people, most of these athletes are bachelor degree or above, can be said to be the morality, intelligence and physique beauty all-round development [9].

2.3 Current Status of Tourism and Tourism Technology in the Field of Competitive Tourism

The field of competitive tourism has always been a field of development in China, which represents a high prestige, because it is actually mainly through organizing and carrying out Olympic scientific research projects, and then has the ability to mobilize various forces to participate. It is a very representative Olympic event, the development of competitive tourism field can effectively improve China's tourism scientific training ability, and ultimately promote the development of tourism tourism technology.

Generally speaking, the task of the competitive field is relatively heavy. It should select scientific research projects, combine the sports training situation of various countries, and then review by relevant experts. Therefore, China will pay more attention to the development of the national team scientific research team, so that it can make contributions to the Olympic Games tourism science and technology work. For example, China held the Beijing Olympic Games in 2008, during which the national research team played a vital role, and all parties actively cooperated with the Olympic Games. For example, the General Administration of Tourism includes a national team research team of physical training, sports influence and other disciplines, and has a complete management mechanism. At present, our country has been very familiar with the use of information technology, through some platform for the basic information of tourism detection and reality analysis to obtain the current situation, and effective management, at the same time the author wants to say that information technology can also promote the development of tourism research, so this is why countries pay attention to education.

3 Implementation of the System Functions

3.1 Basic Information Query

Users can use the system to query their parks, scenic spots, scenic spots, exhibition halls, resorts, etc., the specific address, geographical location, scenic spot contact number, related images, audio, pictures and other information, can show the user specific scenery and detailed text, image description. Automatic notification can automatically recommend the latest tourism dynamic information for users, such as the weather situation of the scenic spots, the introduction of relevant preferential and tourism policies, new tourism activities and planned valuable tourism routes [2]. The system can combine the personal travel needs and use the GIS space analysis function to choose suitable travel routes. For example, a tourist can use the system to query the corresponding tourist routes on the network platform, and extract and count the number of information about the tourist routes, the quality of the facilities, the specific cost and time, routes, etc. The systematic analysis can provide users with reasonable travel routes and the best reference information.

3.2 Virtual Roaming Function

The system can also provide users with virtualization scenic roaming, using remote sensing navigation technology to obtain information of scenic spot, successfully build tourist scenic area 3d model, and to the user the actual situation and landscape features, can let the user combined with their own tourism will choose route, including show the user 3d. At the same time, you can play a role, participate in the layout of the whole scenic spots, and can automatically explain the characteristic scenic spots, reserve suspense for tourists, create interactive participation and use experience, and attract users' interest in tourism in the scenic spots [11] (Fig. 1).

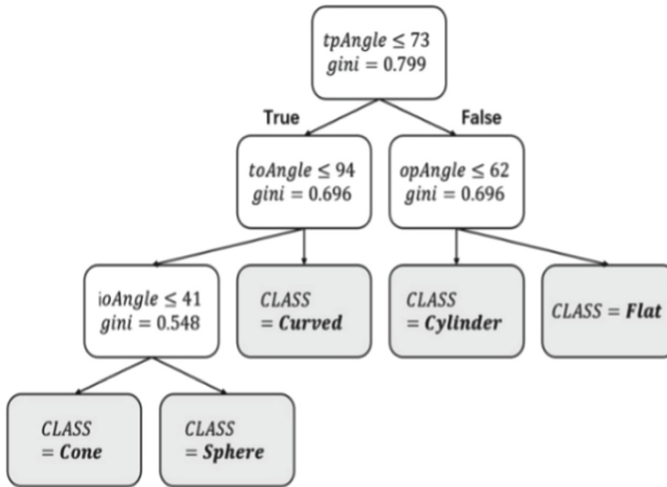


Fig. 1. Virtual reality technology demonstration.

4 Main Application of Virtual Reality Technology in the Tourism Industry

In order to establish a realistic virtual environment, in addition to the widely used texture mapping technology, LOD (LevelofDetail) technology and collision detection technology are also often used. On the one hand, it is designed to increase the speed of real-time display. LOD application LOD (called hierarchy of detail model) refers to using objects in the same scene or scene to build a set of models with different details for rendering according to the distance and occlusion relationship. Because the virtual travel environment is complex, if the same calculation of all the models in the scene at any time (close view, vision, or blocked), it will greatly affect the display speed, thus affecting the fluency of real-time roaming. LOD technology is used to establish three levels of models (high precision model, medium precision model and low precision substitution model) for some relatively complex objects in virtual scenes. In the process of real-time roaming process, the high precision model is used near the viewpoint, while the medium precision and low precision model are used in the distance with the distance. At the same time, as the viewpoint keeps moving (from one zone to another), the corresponding accuracy model is dynamically used in real time. This greatly improves the rendering speed, and also better coordinates the contradiction between the speed and the effect. Collision detection Collision detection is the basis of the interaction between dynamic and static objects or between dynamic objects in a virtual scene. Colash detection during virtual environment roaming is mainly to avoid penetration between users and objects. Since the user moves mainly the viewpoint when roaming in the 3 D scene, the detection model can simplify the main detection of the collision situation between the viewpoint and the object [10] (Figs. 2 and 3).

The main advantage of virtual reality technology is that it can truly present the objective environment in front of the audience, and you can feel the relevant environment and

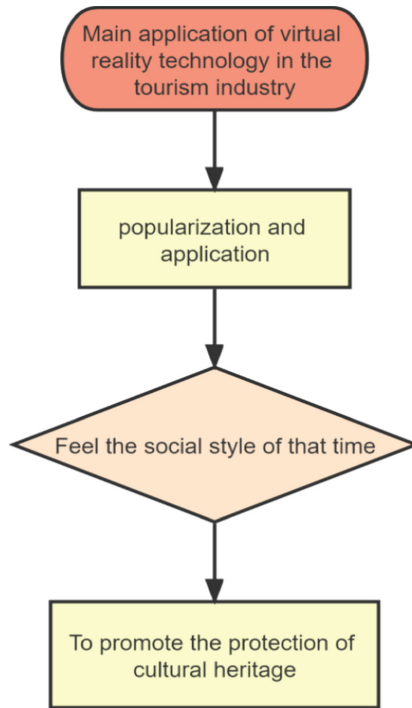


Fig. 2. The Main application of virtual reality technology in the tourism industry.

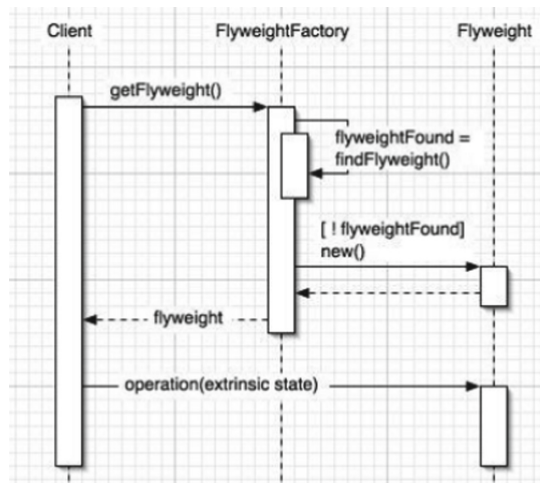


Fig. 3. Construction of smart tourism model under virtual reality technology.

atmosphere without going to the scene [12]. Through the humanized human-computer operation interactive interface, audiences can choose the content they are interested in to browse and watch. The technology is widely used in construction, e-commerce, interactive entertainment, distance education and other fields, and is gradually promoted and applied in the tourism industry, and has achieved good application results. Visitors visiting some ancient buildings and ancient sites can not imagine the scene of these tourist attractions when they were just built, which also affects the tourist experience to some extent. Using virtual reality technology can effectively solve such problems, intuitively present the situation of ancient sites in front of tourists, and enrich the experience of tourists. For example, the virtual building scene of ancient Greece established by technicians through virtual reality technology reproduces some seriously damaged buildings. Tourists can wear corresponding equipment to experience the magnificent scene of ancient Greek architecture, feel the social style at that time, and get amazing visual enjoyment. Virtual reality technology can promote the protection of cultural heritage, using VR technology and multimedia technology can digitize China's rich ancient cultural heritage, at the same time can achieve effective and comprehensive protection of these heritage, many regions applied this technology, has achieved good results. The Palace Museum is China's first world cultural heritage and national key cultural relics units, due to the demand of cultural relics protection and objective factors, many collections and buildings cannot public display, to give full play to the Palace Museum of cultural exchange, better protect the heritage, science and technology personnel using virtual reality technology to complete the Forbidden City emperor palace the virtual scene, fully shows the Forbidden City resplendent and majestic [6].

5 Conclusion

The realization of smart tourism has become an inevitable trend of tourism development, and is an indispensable component of the construction of smart city. Because it involves a wide range of tourism information, it is necessary to comprehensively consider all links to meet the behavioral needs of tourists. In the design and development of the wisdom tourism system based on virtual reality technology, considering the tourist subsystem, tourism management subsystem, tourism service enterprise three subsystem detailed function, and prove to present stereo real tourist scenic spot immersive experience, is a good wisdom tourism system experience. The unique nature of VR technology determines its development will cause the revolutionary impact of the current tourism industry, virtual tourism is the fusion to a certain degree, and in the process of fusion, VR technology can effectively solve the limited reality tourism resources and the development of infinite contradiction, and to promote the self-improvement of modern tourism system.

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