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Abstract. The landscape design as the human living space geographical composition is very important part of ecological system, the existence of regional landscape not only provides residents with a versatility, layout, balanced, open outdoor public space of free activities, whereas in the past the landscape design of the system is designed in accordance with the local geographical factors, more is not fully consider various comprehensive factors. The purpose of this paper is to properly introduce the existing technology based on distributed theory such as remote sensing positioning and data analysis to optimize the landscape design system. By using the data sensing module of Hadoop landscape design system and the distributed coding technology for genetic algorithm, the application of 3D landscape design is carried out. Its characteristic and innovation is the fusion of distributed storage and cluster, the design of big data dynamic storage system, analysis of its operation depends on the analysis and algorithm technology, compared with the final system operation effect. Experimental results show that the landscape design system based on distributed very well to the geographical location, topography, the surrounding environment, traffic conditions, historical and cultural factors, such as analysis, determine the theme of the landscape planning and design positioning, functional partition and content of ecological landscape, through the analysis of the landscape planning and design, take its long, avoid its short, problem solving, superposition of advantages, for a more reasonable and high quality to complete the landscape planning and design is of great significance.

Keywords: Landscape Design System, Distributed Landscape, Three-dimensional Landscape, Big Data

1. Introduction

In recent years, as the development of urban and rural areas in China has entered a stage of rapid

development, the construction of various areas has been constantly promoted, with the rise of new areas, high-rise buildings and increasingly improved infrastructure, people's living standards have also been significantly improved, thus people have higher requirements for the landscape design of living environment. At present, the expression of regionalism in landscape design system is mainly based on traditional imitation. In this increasingly homogeneous world, how to embody regionalism in the landscape design system has become an unavoidable problem. Therefore, the research in this paper can provide a certain theoretical basis for other landscape design systems, provide a basic thinking direction for future practice, and help to promote the perfect integration of landscape design systems and regionalism.

From the perspective of foreign studies on landscape design systems, developed countries such as Europe and the United States have realized the negative impact brought by the homogenization of landscape design systems, and thus started to explore new operating modes of landscape design systems [1]. Landscape design system based on natural ecology is the main means in European and American countries. Meanwhile, some ecological landscape theories emerge as The Times require, such as distributed landscape pattern, network landscape pattern, staggered landscape pattern, checkerboard landscape pattern and so on [2-3]. At the same time also causes people to protect the rural natural environment and rural landscape spatial planning awareness. In China, landscape is mainly considered to belong to the category of natural heritage, which is formed by the interaction between man and nature in long-term environmental changes and historical evolution [4]. Based on this, it is proposed to integrate and improve rural natural and cultural resources based on local traditional agricultural production and life and guided by landscape design strategies [5].

In this paper, landscape design, green design such as sustainable development theory as the foundation, supported by the concept of LID, combine the Hadoop landscape design system, puts forward a set of system of LANDEP landscape design method, including the landscape elements of the investigation, based on the analysis of landscape ecology, to optimize the land use and landscape ecological evaluation content [6-7]. The distributed cluster big data dynamic storage system based on Hadoop integrates multiple storage servers into a single cluster system [8]. At the same time, the "multi-layer cake" planning mode proposed based on the adaptability analysis has a significant impact on the whole landscape planning and design system [9]. Through field research on the characteristics of different regions and typical landscape design cases, the development principles of the landscape design system were summarized to build an adaptive landscape design system [10]. It has a good reference and guiding significance to the subsequent system design. Based on the thought of system theory, the landscape system design concept is put forward based on a variety of regional factors. On the premise of respecting the living environment, production and lifestyle of the local ecosystem, the landscape design system is built for the market and the public [11-12].

2. Method

2.1 Linear Landscape Planning Method

The linear landscape planning method means that the system USES the improved dynamic load balancing algorithm to balance the memory load of the system and obtain the comprehensive index parameters. The storage server synthesis index value is calculated based on the ratio of performance index to load index. No landscape is static at all times, whether in the design phase or the finished use

phase of the design or in any period of each phase. In the process of coordinated development with the surrounding environment, the formation of linear green landscape will be disturbed by many natural or man-made factors, making it unable to develop effectively or even suffer from varying degrees of damage. For example: town transition development, seasonal climate change, human participation is not standard and so on. Therefore, the landscape design of linear green space should not only reasonably use the design theory, but also combine with the field conditions of the project site to conform to the overall development trend of the landscape, so as to conform to the general direction of superior planning, so as to make the overall design forward-looking and predictable. At the same time, literature related to landscape planning and design theories, such as landscape design, garden aesthetics, ecology, psychology and other related disciplines, were searched for research. In view of the subject of this study, focus on the relevant theories and evaluation methods to explore. To conduct field research on the natural environment, cultural environment and historical background of selected sites, take photos and record data, and learn from and utilize the comprehensive analysis methods at home and abroad.

2.2 3D Landscape Virtual Technology

In the current big data environment, the virtual design of 3D landscape requires the use of dynamic network structure. Due to the developed network technology and comprehensive functions, the design speed can be improved. In landscape design, its main contents include: terrain planning, vegetation planting, taking the architectural appearance and surrounding environment greening into consideration, designing dynamic scene browsing screen, and making real rendering and 3D virtual animation to display the scene in multiple directions and angles. The system is divided into modeling editing, planning and design, sprinkler design, data analysis and statistics, planting design, rendering animation production and other modules. In the process of development and design of 3D landscape design system, it is necessary to contact with professional landscape design for many times to fully understand the functional requirements of various aspects of the current landscape aided design system and develop functions of different modules. The hardware of the system is composed of three parts, which are resource base, model scene design and data statistics. The 3D landscape design virtual system USES the regular grid method to complete the terrain design, and USES the local interpolation algorithm to process all the relevant terrain data, USES the triangle to point method to construct the terrain, and then converts it into the regular grid data. The terrain is converted to digital form by local interpolation algorithm and the sampling points are planned. The simulation accuracy of 3D terrain mainly depends on the sampling accuracy and data information of target terrain, and the obtained information is converted into 3D digital model. In order to reduce the influence of data sampling error on simulation results, manual intervention is adopted to control the error, which can achieve the desired effect.

3. Experiment

The experiment in this paper is a comparative analysis of typical cases of landscape design. The natural features and cultural features of the region are very different from each other, and the region is far apart from each other. The culture is completely different and compatible with each other. Through selecting the points of different types of landscape design systems, collecting the system data from the aspects of planning and design, sprinkler design, data analysis and statistics, planting design and so on,

analyzing the algorithm technology on which the operation depends, and comparing the final system operation effect. Experimental objects based on the principle of the distributed geographic location, topography, the surrounding environment, traffic conditions, the analysis of the history and culture, and will be based on the local interpolation algorithm about all terrain data processing, using triangle points method for terrain structure, and then converted to regular grid data, and determine the orientation, function partition and the theme of the landscape planning and design content of ecological landscape. Make the plane layout presents free curve, adjust the linear design of the system beautiful, soft, plump, easy to adapt to the terrain. Enrich the activity space and the view, clear the overall structure.

4. Discuss

4.1 Operation Analysis of Distributed Landscape Design System

In the big data environment, the distributed landscape design system is used to analyze the landscape design operation of this lot. The main data sources include 1:100 paper topographic map, uav image, real estate distribution map, occupation status map and other data. The topographic map of the landscape study was scanned and the data entered into the computer. The image is again spliced to form the topographic landscape design drawing. At the same time, the resolution of virtual rendering animation is processed, and geometric correction image is given priority to, and the corresponding spatial and geographic location is matched and superimposed, providing a basis for experimental verification of distributed landscape virtual design system. The distributed landscape design model can be obtained by extracting the distributed landscape module, planning the slope direction and slope of the virtual construction, and analyzing the attribute data after reclassification. The main factors in the model are slope, terrain utilization, landscape design and soil and water conservation. The operational analysis results of the distributed landscape design system are shown in table 1 below.

Table 1. Operational analysis results of distributed landscape design system

Slope	Topographic utilization	Landscape design	Soil and water conservation
0-5	23	0.43	7.663
6-15	36	0.29	8.482
16-25	18	0.58	5.311
26-40	26	0.47	7.998

According to the divided slope to virtual distributed landscape planning, from 0 to 40 different slope and analyze the influence on landscape planning, the resulting average test level 0.46 the landscape design of the system, which combines the condition of different slope landscape design, the geographic information added to the landscape design of the virtual technology, better achieve the desired simulation effect.

4.2 Data Perception Effect Test of Hadoop Landscape Design System

Distributed cluster based on Hadoop big data dynamic storage system is controlled by the central cluster, permanent big cluster data acquisition, data storage cluster and high-speed Ethernet connection modules, central control cluster for user requirements through high-speed Ethernet connection module collection instructions to cluster data acquisition, large data acquisition are controlled by the central cluster cluster scheduling. The landscape consists mainly of substrates, patches, corridors and other elements. By importing the above landscape elements, the Hadoop landscape design system can give full play to the comprehensive value of the system. The order landscape system built by it is jointly constructed by the evaluation function, monitoring dynamic and analysis structure. This paper tries to apply the concept of low-impact development in the design of landscape elements, improve the quality of the landscape system through the optimization of Hadoop landscape design system, so as to create a livable urban environment, and realize the difference of matrix, patch, corridor and other factors of sustainable development to make the landscape functions constituted by it different. By comparing the proportion of landscape design system with matrix, patch, corridor and other factors, the data perception effect of Hadoop landscape design system was tested. The data perception effect of Hadoop landscape design system is shown in figure 1 below.
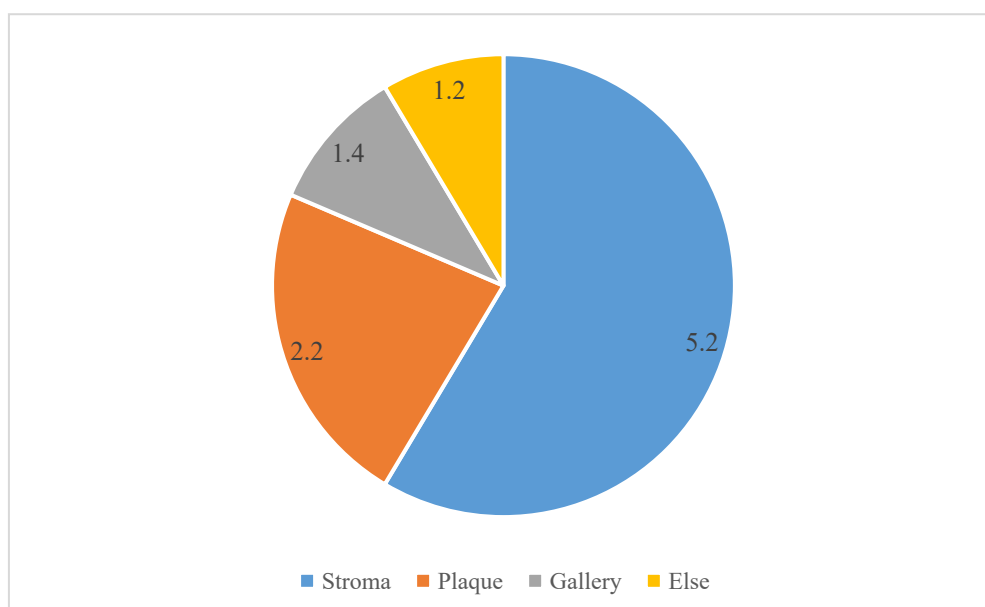

Figure 1. Data perception effect test results of Hadoop landscape design system

Through the analysis of the data perception effect test results of Hadoop landscape design system, it can be seen that the proportion of matrix is as high as 5.2, with the largest influence weight. At the same time, the other three elements also account for a certain proportion, so it can be seen that multiple functions are the embodiment of multiple values of the landscape, which is also a necessary condition to maintain the sustainable development of the landscape.

5. Conclusion

With the progress of The Times, people's pursuit of material environment and aesthetics is increasing day by day, and the aesthetic value of landscape design is constantly progressing and developing. Through the optimization of Hadoop landscape design system, the quality of landscape system can be

improved, dynamic data can be quickly collected and cached data can be regularly imported into the permanent storage cluster for storage. By summarizing the development principles of the landscape design system, the adaptive landscape design system can be built. On the premise of respecting the living environment, production and lifestyle of the local ecosystem, the landscape design system is designed for the market and the public. Reasonable landscape design system can maximize the function and value of the ecosystem and make human activities bring positive impact on the environment.

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