

The Integrated Development Model of Country Road, Culture and Tourism Industry Based on Cloud Technology Algorithm

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Abstract. In the development of social construction, the construction of rural roads in rural areas has been highly valued. With the continuous improvement of the road construction system, as one of the transportation channels, it not only speeds up the pace of agricultural production technology reform, but also is an important medium for the development of rural culture. Therefore, on the basis of understanding the development direction of rural road integration with culture and tourism industry in the new era, and combining with cloud technology application algorithm, this paper mainly discusses the practical significance and effective measures of industrial integration development, and discusses the optimal planning and layout scheme by taking the layout pattern design of country road network in a certain area as an example.

Keywords: Cloud Computing; Random Forest Algorithm; Country Road Culture; Tourism Industry; Integrated Development.

1. Introduction

Developing rural roads is an important means to promote rural economic modernization. As transportation is an effective way for regions to connect and rely on each other, a perfect transportation network can speed up the connection between urban and rural areas, promote the flow of resources and market integration, and provide more quality services for rural farmers, so rural road construction and industrial integration development are the focus of attention in the new era. With the continuous improvement of the level of rural road construction, rural culture has undergone drastic changes, and the industrial demand in various fields is increasing. Due to the particularity and diversity of rural culture, it will be affected by folk customs, natural resources, geographical environment and other factors to a certain extent, and these characteristics will be effectively reflected in the application of country road construction, from which people can draw endless inspiration. Actively promoting the construction of rural roads can allow urban residents and rural residents to have more interaction opportunities, and accelerate the integrated development of rural roads, rural culture and rural industries.

"13th Five-Year Plan" 17 as an important stage of the comprehensive transformation and upgrading of China's economy, after putting forward the development goal of industrial integration, the tourism industry is integrated into the overall plan of the cultural industry, and the tourism industry has ushered in broad prospects for development. With the continuous development of China's social economy and science and technology, information technology and network technology have been integrated construction, industrial integration as the core theme of current economic sustainable development, such integration can produce agglomeration and superposition effect between industries, and ultimately achieve the basic goal of mutual benefit and win-win. Based on the analysis of the existing cloud computing application algorithm, it can be seen that the integrated development of rural road, culture and tourism industry has shown the value of The Times, which is reflected in the following points: First, tourism, as an important carrier of cultural development, cultural exploration and cultural protection are conducive to the innovative development of tourism industry. In areas rich in tourism resources, we should strengthen the construction and management of rural roads, dig deep into the historical and cultural resources behind them, and better protect and inherit the local culture. Secondly, cultural connotation is an important expression of the core

competitiveness of tourism development. In order to improve the cultural connotation of the region, it is necessary to tap more valuable historical and cultural resources, organically combine tourist attractions and cultural connotation, and provide more added value for the construction of tourism industry. Finally, tourism is an important part of the tertiary industry, which has the characteristics of strong employability, high added value and little pollution in Greece. Vigorously developing tourism can improve the cultural added value, meet the spiritual and cultural needs of the people, improve the economic structure, increase residents' income, and promote the integrated development of the primary, secondary and tertiary industries.[1.2.3]

In the face of the steady development of social economy in the new era, the transportation demand of urban and rural areas presents the characteristics of individfication and diversification, which prompts the basic form and organizational function of rural country road network to change constantly. By interpreting and analyzing the professional concept of rural country road, understanding the type, function, characteristics, development status and development trend of rural country road, some scholars have systematically studied the optimization of country road network layout and corresponding programs. In this context, the development of communication based on country road construction planning and the promotion of diverse exchanges between different regions can better realize cultural inheritance and technological innovation. On the one hand, enrich cultural resources and realize cultural inheritance. Under the influence of natural conditions and human environment in different regions, cultural tourism and country road construction in each region are unique. Let the cultural tourism industry in rural areas "go out", so that they can be widely spread across the country and even the world, not only can show its leading role in the field of social culture, but also can improve the level of economic development in rural areas, optimize the overall efficiency of rural cultural construction; On the other hand, cultural exchanges should be promoted to achieve industrial integration. The construction of rural roads makes the cultural and economic exchanges between different regions more and more close. Whether it is a motor vehicle or a bicycle, it can bring a lively and active atmosphere. The way of life, social habits and folk traditions of local residents are all part of cultural development. country road connection can blur the significant cultural differences between different regions and allow cultures to flow and integrate, which provides new ideas for economic development. It can be clearly seen that the development of a new generation of country roads integrates country road construction, cultural inheritance and industrial development. At this time, the country road is not only a simple model of regional transportation, but also truly reflects the basic function and cultural value it carries, improves the development level of local public facilities and cultural construction, and contributes to promoting its modernization process.

Therefore, after understanding country road planning and common cloud computing application algorithms, this paper starts from the perspective of economic construction and development in the new period, and systematically studies the development direction and model of rural country road integration with culture and tourism industry, so as to lay a solid foundation for economic construction in the new period.[5.6.7.8]

2. Method

2.1 Country Road Types and Functions

As an important passageway connecting cities and towns, rural roads are divided into county roads, laneway and village roads according to administrative levels. Under the restrictive conditions of China's rural economy and other factors, China's rural roads are mainly suitable, and the structure is highly hierarchical, which is neither real nor necessary. Therefore, the technical level and the importance of roads are corresponding, and the specific types are divided into two types, one is divided according to functional levels, and the other is divided according to administrative attributes, and the specific structure is shown in Figure 1 below:

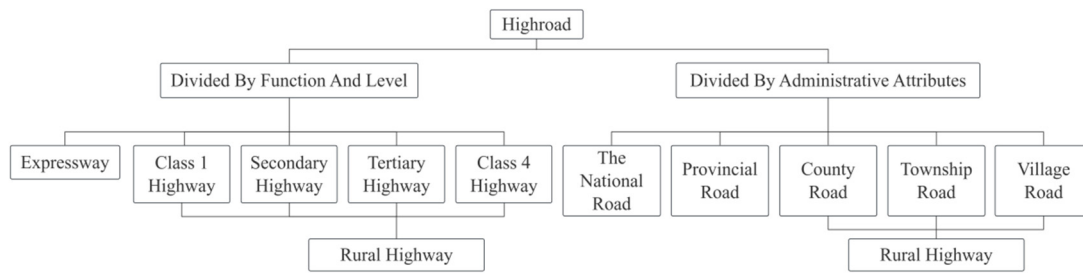


Fig 1. Type structure diagram of rural country road

Taking rural roads as an example, they mainly serve the connection between the township people's government and the administrative village, and further define the service objects according to the rural function positioning, as shown in Table 1 below:

Table 1. Specific contents of rural service objects

Serial number	The service object of village road
1	Town people's government (development zone, sub-district office) from the location of the New Deal village under the jurisdiction of the highest technical level and does not belong to the county road and above the road
2	Roads between adjacent towns (development zones, sub-district offices) that do not belong to county roads and above
3	The only road connecting multiple (3 or more) administrative villages and not belonging to the county road and above.
4	Town people's government (development zone, sub-district office) from the area under the jurisdiction of the county level and below the development zone, agricultural parks, industrial parks and important nodes, 3A below tourist attractions, township passenger transport simple station, taxi station and other nodes of the highest technical level and do not belong to the county road and above the road
5	Town people's government (development zone, sub-district office) location and the city's national road, provincial road, county road short direct contact line
6	Roads that do not meet the above conditions but undertake bus operation in towns and villages

2.2 Classification and Classification of Rural Country Road Section Nodes

The form of the country road network refers to the simplified network diagram composed of the country road network according to the transport nodes and the connection points between nodes, which will be represented on the plane by the form. It is mainly divided into two parts, on the one hand refers to the node, on the other hand refers to the compilation. The form of country road network is the final result of urban planning and layout, and also the external manifestation of internal elements and mutual coordination of country road network. According to the attributes of node function positioning, production capacity and traffic demand, nodes are currently divided into four categories, as shown in Table 2 below: [9.10.11]

2.3 Random Forest Algorithm

Nowadays, when solving the problem of section selection of rural country roads, it will be regarded as a classification problem, and suitable section selection categories will be recommended for each node combination. Taking stochastic algorithm as an example, as an integrated learning algorithm, it not only has a strong learning function, but also is more suitable for related research than classification algorithms such as neural networks. As a basic classifier of random forest, decision tree has great advantages in solving classification problems and regression problems. The specific construction process, including feature selection, decision tree generation and decision number pruning, is shown in Figure 2 below. [12.13.14.15]

Table 2. Introduces the classification and classification of rural country road nodes

Type level	Administrative node	Economic node	Tourism node	Traffic node
County node	County administrative center	Provincial-level development zones, agricultural parks, industrial parks, and municipal logistics parks	4A or above tourist attractions	The upper road network is not covered by airports, high-speed interconnections, railway stations, ports, etc
Township node	Town (street) administrative center	Municipal development zone, agricultural park, Industrial park, county-level logistics park	3A Tourist Attractions	Township passenger transport grade station
Village node	Administrative village	Development zones below the county level, agricultural parks, industrial parks	3A below tourist attractions	Township passenger transport station, greeting station

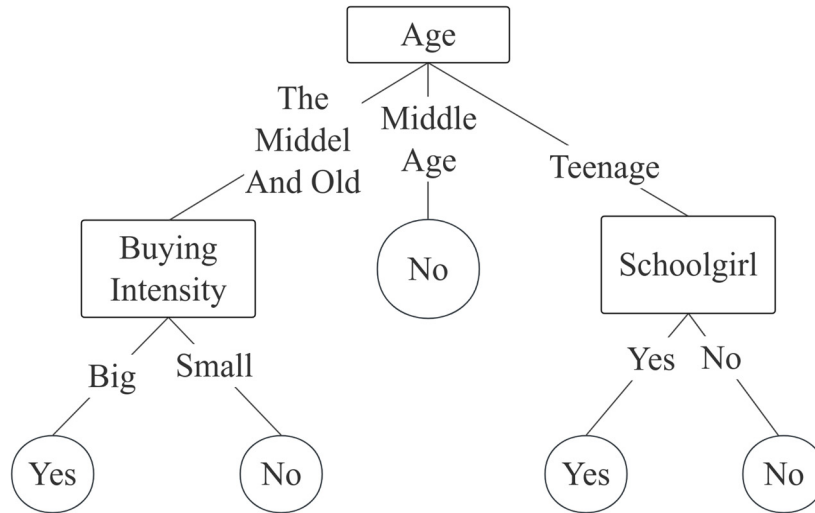


Fig 2. Flowchart of decision tree construction

Random forest was originally an application method built based on decision tree classifiers, which mainly includes two parts: the construction stage and the prediction stage. The overall algorithm structure is shown in Figure 3 below:

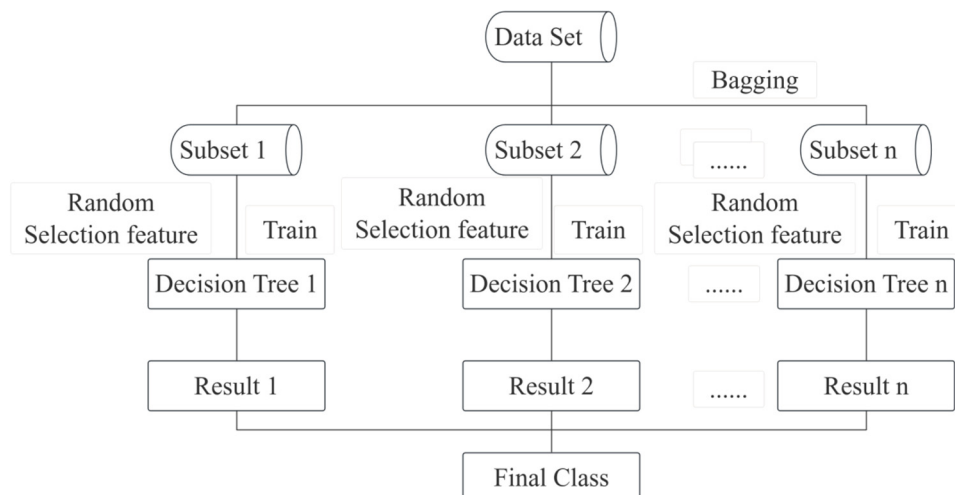


Fig 3. Structure diagram of random forest algorithm

The pseudo-code table of the algorithm is shown in Table 3 below:

Table 3. Pseudo code table of random forest algorithm

The detailed pseudocode is as follows
Input: Training data set D, number of sample subsets n, number of decision trees a
Output: Random forest $f(x)$
1. For $t=1, 2, \dots, T$
1) m data points are randomly selected from the original data set to obtain a training level D_t
2) Use the training set D_t to train a decision tree (ID3, C4.5 or CART classification tree). When each decision tree is trained, the division standard for each node is to randomly select k features from all the features, and then select the optimal division point from the k features to make the division of decision tree subtrees.
2.A decision tree is gathered into a forest, and the classification result will be obtained by voting on this decision tree.
The pseudo-code of the random forest algorithm is as follows
Input: training data set D, number of sample subsets n, number of decision trees a
Output: Random forest $f(x)$

3. Result Analysis

3.1 The Practical Significance of the Integrated Development of Country Road Culture and Cultural Tourism Industry

The integrated development proposal of country road, culture and tourism industry has been highly valued by government departments and all sectors of society. Although there are still some problems in its development that need to be studied and solved urgently, it has the following significance based on the accumulated experience of construction in recent years: On the one hand, when government departments attach importance to management and construction, they can ensure local traffic safety, economic and environmental protection and cultural protection, define the effective direction of local country road culture construction, and gradually improve the quality of tourism services and the management level of scenic spots, so that local residents and tourists from all over the world can enjoy culture while feeling satisfied with quality services. On the other hand, after completing the popularization and construction of conventional culture, focusing on the development of leisure sports, literary and artistic creation, characteristic tourism and other industrial integration development projects with regional advantages can further expand cultural influence and obtain more directions for economic construction and development.

3.2 Effective Countermeasures for Integrated Development

First, pay attention to top-level design. From a macro perspective, in the integrated development of local roads with culture and tourism industries, it is necessary to put forward a macro-overall planning plan with high standards and strict requirements, determine the overall plan for tourism development and industrial development, strengthen the management of country road construction, correctly handle the relationship between resource development and protection and market competition, and put forward operational and targeted control measures. According to the country road, the cooperation and exchanges between different regions should be strengthened, a unified tourism publicity platform and planning channels should be established, and feasible cultural tourism marketing strategies should be proposed to promote the development and aggregation of cultural tourism.

Second, we need to promote innovative development. In order to make the country road, culture and tourism industry become the pillar industry of the national economy, we should pay attention to the innovation of the system and mechanism, gradually improve the management system of country road culture construction in the local region, gradually accelerate the transformation and upgrading of cultural tourism enterprises, put forward a modern enterprise management system that meets the

requirements of market competition, and actively introduce country road planning schemes and cultural tourism products that meet the market demand. Promote the reform, innovation and development of cultural tourism enterprises according to the methods of merger and reorganization, cultural export and chain management. At the same time, it is necessary to comprehensively use a variety of ways to allow social capital and private capital to invest in the industrial integration development model, and encourage and support qualified cultural and tourism enterprises to go public, so as to strengthen the development scale and competition level of enterprises.

Finally, science space layout. The integrated development of country road, culture and tourism industry should take the market mechanism as the basic condition and form a scientific layout in the effective allocation of resources. Take the advantageous resources of the region as an important basis for development, while following the laws of market economy, gradually improve the existing country road system, clarify the positioning of cultural tourism product development, propose targeted leading enterprises, gradually expand the characteristic cultural tourism industry cluster, build a batch of red literature and art products with regional characteristics, and select good basic places. Create and package cultural resources to solve practical development contradictions while achieving various achievements.

4. Peroration

To sum up, the country road is regarded as an important infrastructure for the integrated development of economic construction and cultural tourism industry in rural areas, the planning layout and construction management are completed by using cloud computing application algorithms, the industrial integration development plan is proposed from the current development needs, the documents and policies proposed by relevant state departments are systematically understood, and effective measures are finally taken. We will promote the integrated development of country road and cultural tourism industries.

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References

- [1] Li Jiang. Research on the integrated development model of Jingdezhen ceramic culture Industry and tourism industry [J]. Ceramic Research, 2023(5):95-97.
- [2] Yanhua Guo." Global culture + Global Tourism "Tourism industry development model innovation based on industrial integration [J]. Knowledge Economy, 2022(4):8-9.
- [3] Zhiyan Shi and Aihua Gao. The Integrated development Model and Innovative Practice of Culture and Tourism based on Big Data Application: Review of the Research on the Interactive Integrated Development of Cultural Industry and Tourism in the New Era [J]. China Oils and Fats, 2022, 47(6):162-162. (in Chinese)
- [4] Wenjie Zhou, Beiyang Ding. Exploration and thinking of development mode of expressway service area in Guizhou Province under new situation [J]. Qinghai Transportation Science and Technology, 2022, 34(4):1-6. (in Chinese)
- [5] Wei Miao, Ye Xu. Research on the integrated development model of cultural and creative industry and tourism [J]. Tourism Review, 2022(8):58-60.
- [6] Han Xu, Tengfei Gu. Thinking on the integrated development of rural country road and culture [J]. Transportation Enterprise Management, 2022(002):037.
- [7] Bo Li, Yu Sun. Tourism development strategy of Red cultural scenic spots along yellow Areas in Shaanxi Province from the perspective of experience economy [J]. Tourism Review, 2022(12):103-105.

- [8] An analysis on the deep integration path of red culture and tourism country road construction -- taking Yancheng City as an example [J]. Journal of Yancheng University of Technology: Social Science Edition, 2022, 35(4):5-9.
- [9] Huibin Xing, Nan Shen. Research on high-quality Collaborative development of Expressway and Tourism under the background of Transportation and Tourism integration [J]. Grand Stage, 2022(6):62-67.
- [10] Wenjie Xiao. Theory and Practice of the Integrated Development of Cultural Tourism Industry and Urban Construction -- Review of the Research on the Integrated Development Model of Cultural Tourism Industry and Urban Construction [J]. Modern Urban Research, 2023, 38(10):I0006.
- [11] Ping Huang Ling Li Longchuan Hu Min Zhang. Research on the path and model of integrated development of county cultural tourism industry in Sichuan [J]. Journal of Sichuan Vocational and Technical College, 2022, 32(5):77-84. (in Chinese)
- [12] Qing Li Ruochen Wang battle Wang. Discussion on the mode and path of promoting rural revitalization through the integrated development of intangible cultural heritage and tourism: A case study of Yaotou ceramic firing technique in Chengcheng [J]. New West, 2022(5):92-94.
- [13] Xin Kong, Ruyi Li, Wenchao Li. Countermeasures and suggestions for promoting the integrated development of wine industry and cultural tourism in Ningxia [J]. Chinese Science and Technology Achievements, 2023, 24(5):24-26. (in Chinese)
- [14] Yaqing Zhang, Yanfang Liu, Wen Yan and Chunmei Zhang. Study on the construction of rural tourism belt around the Great Wall Tourism country road in Qinhuangdao [J]. Journal of Hebei Normal University of Science and Technology: Social Science Edition, 2022, 21(1):53-58.
- [15] Yu Zhang Tianyu Gao. Exploration on the innovation path of tourism formats in Shanxi under the integrated development of "big data + Tourism Transportation" -- A case study of cultural institutions.] Shanxi Finance and Taxation, 2022(8):41-43.