

Research on Tourism Data Mining Based on Artificial Intelligence

Wang Wei

Hubei Three Gorges Polytechnic, Yichang City, Hubei Province, China

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Abstract: In the current trend of tourism demand development, the content, mode and hot spots of tourism demand are constantly updated, and the concept of tourism demand has changed from passive acceptance to active choice. According to the characteristics of tourism database, the data preprocessing work and decision tree mining process before mining are explained. Tourism is a typical service industry. The indivisibility, fragility and non-storage of tourism products in production and consumption objectively require product suppliers to accurately and timely understand the needs of consumers, and the mining rules are analyzed. Artificial intelligence is a human brain simulation technology that makes full use of computer technology and other discipline technologies for intelligent learning and automatic control, to deeply explore tourist information of interest to tourists and speed up the rate of tourism data mining, knowledge base system parameters, based on the realization of data set feature mining of tourism multi-dimensional data, and mining tourism data under different states.

1. Introduction

The state has always attached great importance to the tourism industry. Every year, the National Statistical Bureau and tourism departments at all levels collect a large amount of information from the society through questionnaires. As far as the basic principle or core principle of tourism marketing is concerned, it is consistent with marketing in other fields, but as far as the nature of tourism demand and the operating characteristics of tourism supply industry are concerned, tourism marketing has its own particularity. Any visit to a tourist destination is a combination of many factors [1]. However, this information is often used only for simple statistics and queries. Data mining is to extract or "mine" useful information from a large number of data, and then provide decision support [2]. The application fields mainly focus on data analysis, pattern recognition and information retrieval. At the same time, artificial intelligence technology and database technology are closely related to them. Each value of an attribute generates a branch. The corresponding sample subset of branch attribute values is moved to the newly generated sub-nodes [3]. Data mining is applied recursively to each child node until all samples on one node are partitioned into a class. Only by dynamically grasping the evolution of tourism status can it provide scientific and accurate decision-making basis for tourism intelligent control and intelligent management, realize intelligent management and informationization of tourism in a true sense, and promote the healthy, orderly and safe development of tourism [4].

Nowadays, the society has entered the era of artificial intelligence. The application of artificial intelligence has greatly improved our life. Tourism has become a new growth point of tourism economy and an effective carrier to give reasonable consideration to the adjustment of industrial structure and the multiple needs of residents'leisure tourism. With the popularity of the network and the increase of tourism websites, customers often get lost in complex websites and numerous information. This requires that the website should be "customer-centric" [5]. According to the individual preferences of customers, provide unique personalized services. Not only are there various forms of data, such as structured data, semi-structured or unstructured data, but also because of the role of the Internet, the relationship between data and data is becoming more and more complex. Data mining is the key of spatial data mining, mining the transformation results to obtain excellent data, schema interpretation and knowledge evaluation [6]. Data mining can obtain sequential pattern rules between warnings by analyzing the correct processing of existing warning information and the record

of the relationship between warnings. This valuable information can be used for location detection of network faults and prediction of severe faults. Wait for the task [7]. The mining data is filtered by calculating the support, confidence, etc., but the final result needs human judgment. Data mining is closely related to artificial intelligence technology, and even many key technologies are consistent with each other, especially in data reasoning and data search, whether it is traditional or non-logical reasoning, inductive reasoning, or modality. The basic principles of the multi-valued inference process are consistent. This paper uses artificial intelligence data mining tools, combined with the characteristics of the tourism industry, to try to find the deep rules of tourism market development from these data [8].

2. Materials and Methods

Tourism as a social and economic phenomenon, its occurrence and development are also based on the spatial system as the material carrier. The spatial structure of tourism is not only the spatial state of tourism activities, but also reflects the spatial attributes and interrelationships of tourism activities. Data mining is a part of artificial intelligence. Firstly, high intelligence is the ultimate goal of data mining and artificial intelligence. Because of this goal, artificial intelligence and data mining have many connections. Normalization refers to the transformation of attributes of continuous values into discrete attributes. Normalization can make data more concise, and it can also make people analyze data at a more understandable level. Clustering analysis of mining and searching information data, grouping customers with similar browsing behavior, finding common characteristics of customers in grouping, helping tourism organizers to better understand their own customer groups, the correctness of reasoning is of great significance to the validity of data mining and artificial intelligence data processing. The search application has been fully reflected in the data mining process, and the searchable paths are continuously explored according to user needs. Among the attributes of the association rule, the degree of support and credibility can directly measure the nature of the association rule. Any two products in the event are given, there are association rules between them, but the attribute values are different. If you do not consider the support and credibility of the association rules, can find an infinite number of association rules in the event database.

For data mining and artificial intelligence technology analysis, we can see that its future development is towards integration, networking and complexity. Integration mainly refers to the continuous integration of a variety of technical means. After the key words of tourism information are input by tourists, the intelligent recommendation module of tourism information carries out data analysis on the key words to realize data mining of tourism information. Understand the market segments of tourist destinations or products in a deeper level, and provide corresponding services with more suitable and satisfactory customers to different customer groups by adjusting information. Data optimization is mainly difficult in mining and organizing keywords, and combining different keywords to design targeted landing surface is an effective way to carry out precision marketing. The classifier is used to classify the data sets of unknown classes. At this time, the class label attributes of each data row in the data set are unknown, and the classifier determines the value of the data set of the unknown class according to the knowledge acquired. Retaining a customer is more important than developing a customer. Using new technologies such as data mining to improve the customer service quality, discover the market, and continuously introduce new tourism products, so that the company's products are strictly differentiated from other companies and establish tourism products. The brand image ultimately attracts and retains high value customers.

To reduce the redundancy between input variables to ensure the efficiency of calculation and the simplicity of output; input independent of output variables may delay or even mislead the mining process, so it is necessary to ensure a certain degree of correlation between input variables and output variables. In addition, when mining association rules, if any candidate set of frequent itemsets does not exist, the search for the remaining candidate sets can be terminated, and then it can be judged that the itemsets do not exist. Search mechanism improves the efficiency of data mining. In order to find meaningful association rules in practical applications, two values need to be given: minimum support and minimum credibility, the former specifies the minimum support that association rules must

satisfy; the latter specifies the minimum credibility that association rules must satisfy. Generally speaking, rules that satisfy certain requirements (such as greater support and credibility) are strong rules. The record of potential visitors' clicks on tourist information of interest can be used as an important data basis for the analysis of the consumption characteristics of potential customers in the tourism industry. These records can show where the potential customers source and when the destination is clicked. The market mechanism can be effectively operated through property rights transactions, and this has nothing to do with the specific definition of property rights. In order to make the development of landscape resources develop in a healthy and orderly manner, it will become a new growth point for local economic development. From the perspective of tourism source market survey, data mining using artificial intelligence as information source is quite comparable to traditional information sources obvious advantage.

3. Result Analysis and Discussion

Although tourism mining information sources have many advantages, there are still some problems, such as the large amount of tourism information, rapid growth and the difficulty of extracting complex content. Artificial intelligence and data mining pay attention to intelligent services, and it is difficult to analyze and process the original data of tourism demand mining. The process of analysis and processing is the process of constructing decision tree. The algorithm to construct decision tree is a greedy algorithm. Generally, some training data are selected first. According to certain attribute selection methods, the decision tree is built in a top-down manner, and then the remaining training data are checked. Networking is to give full play to the key role of the network. It can expand the processing capability of terminal equipment infinitely and form a powerful management control capability. The complexity mainly means that various technical solutions are not limited to the minimum support and minimum given in the computer field. Credibility, the association rules are obtained through the corresponding data mining software. Visualize the results of the classification and evaluate the association rules in combination with the actual. In addition to researching passenger traffic, it is also possible to mine and predict tourism facility usage, tourism consumption, tourist attraction ticket revenue, and tourist traffic flow, and generate useful rules to guide the healthy development of tourism.

There are one or more tourism products in a tourist destination. The richness, popularity, scale, agglomeration, competition and current market conditions of tourism products constitute the data set of tourism market analysis in a tourist destination. The characteristics of the popularity and price of tourism enterprises (scenic spots) constitute the data set of tourism market analysis in a scenic spot. According to the results of tourists' travel planning, the business operation data can be logically identified and organized. Using data mining technology, the simulation of preferential strategies for different tourist routes can be realized. According to the data mining model, we simulate billing and billing. The simulation results can reveal the problems in preferential policies. And the corresponding adjustment and optimization, in order to maximize the revenue of promotional activities. Business operations include data input and editing, spatial data query analysis and data output. Tourism decision-makers can have an overall grasp of the tourism industry dynamics, and can make a basis for the development of the tourism industry, so as to achieve the analysis, prediction and early warning of tourism status. The technique of establishing subdivision through supervised learning is called sub-supervised learning because it is subdivided according to the pre-conceived subdivision feature values. Conducive to the understanding of artificial intelligence, so after the completion of data mining, the knowledge obtained, follow the principles of mining, form a standardized tourism market analysis knowledge base parameters as shown in Table 1.

According to the analysis of tourism data mining, the key to improve the marketing effect in an all-round way. In the specific process of network marketing, we should dynamically monitor the marketing effect, strengthen the analysis of data such as flow, customer, customer turnover rate, jump-out situation, strengthen the analysis of return on investment, and thoroughly study the brand value, customer satisfaction and other programs. The analysis of product-level market is to analyze the development trend and source structure of destination tourism from the micro-perspective of

tourism products. Based on the analysis of the influencing factors of tourism demand, the characteristics and life cycle of destination tourism products, we should build a knowledge base for tourism source market analysis and prediction, and use this kind of description to classify the future test data. Although the class labels of these future test data are unknown, we can still predict which classes these new data belong to. Usually the training data set accounts for 2/3 of the initial data set, and the remaining 1/3 is used as the test data set. The attributes of the data in the sample database are quantified, and the weight of the classification is determined by a metric. The larger the index value, the more the categories are classified, and the smaller the index value, the less the category. The classifier is obtained using the training set data learning, and then the classifier prediction accuracy is evaluated using the test data set. Its organization is divided into two levels, namely, the entire mining data and tourism-oriented products. It makes it suitable for mining the correlation in spatial data, so that the geographic location of another spatial entity can be determined according to one spatial entity, which is convenient for spatial location query and reconstruction of spatial entities.

Table 1 Parameters of Knowledge Base for Tourism Market Analysis

	Change	Preset
Product type	15.17	13.23
Price scale	16.90	14.24
Product function	15.33	19.34
Management and services	18.22	18.17

4. Conclusion

This paper studies the tourism data mining of artificial intelligence. Data Mining and Artificial Intelligence (AI) are important branches of computer science, which have a significant impact on people's daily life and production. Data mining technology can rationalize the allocation of tourism resources, discover hidden valuable information, find potential customers, and provide better personalized services for existing customers. With the continuous development of this technology and people's exploration in management activities, the application of data mining in tourism marketing will gradually mature. Nowadays, China's tourism market is in the data mining of product homogeneity and competition in the stage of scanning database to verify the validity of candidate frequent itemsets. The association rules of tourism spatial information are mined, and the descriptions of spatial predicates are obtained. Spatial association rules. In order to ensure that all forecasting objects have classified results, the abnormal monitoring of data mining is used to provide early warning, so that the tourist destination can prepare for the advancement and promotion. At the same time, data mining can be used to quickly and conveniently understand the characteristics and trends of market demand, and to forecast the tourism demand of tourism destinations and tourism enterprises, and provide a basis for the development of tourism destinations and tourism enterprises.

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