

Design of Tourist Database and POI Database Based on Smart Tourism

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Abstract: The most basic and critical data of smart tourism is tourist data. Therefore, this paper designs a tourist database based on smart tourism, expounds the key points of database design, and finally combines actual application cases to test its application effect. The database has complete functions and can provide tourists with satisfactory services.

1.Introduction

Smart tourism relies on multiple technologies and systems, and uses the network and mobile terminals to collect and sense information about tourists and tourism resources. Based on this, it provides comprehensive services for tourist attractions and tourists in this process. The role played by tourist demand and tourist preference information cannot be ignored. The design of the tourist database has become the top priority in building a smart tourism system. Therefore, the research on this topic is of great significance.

2.Demand Analysis of Tourist Database Design Under Smart Tourism

As we all know, the composition of tourism includes tourists, so tourists are very important for smart tourism. Designing a tourist database to collect various information of tourists, such as: information on eating, dressing, living, playing, traveling, and purchasing, can be smart Tourism provides information and data support. It can be seen that, to provide satisfactory services for tourists, it is particularly important to design a practical tourist database. According to its characteristics, the information of tourists and smart tourism can be divided into the following types:

2.1 Basic information of tourists

After the tourists register and log in to the smart tourism system, the system will obtain the basic information of the tourists. These basic information are composed of the following parts:

(1) tourist name; (2) tourist age; (3) tourist phone; (4) tourist number; (5) tourist password; (6) preferences on clothing, food, lodging, etc.

The above-mentioned types of information, as the content of basic information, belong to a kind of static information, which basically does not change, and the method of obtaining information is relatively simple and convenient. However, if you fill in too much registration information, it will lead to a decline in the tourist experience. The service attributes provided by tourism elements such as clothing, food, accommodation, travel, and so on are very important. Only in this way can tourists not fill in too much information while satisfying the system's demand for tourist preference information acquisition, so that the system can provide targeted services to customers and satisfy tourists Demand. The tourist model is shown in Figure 1.

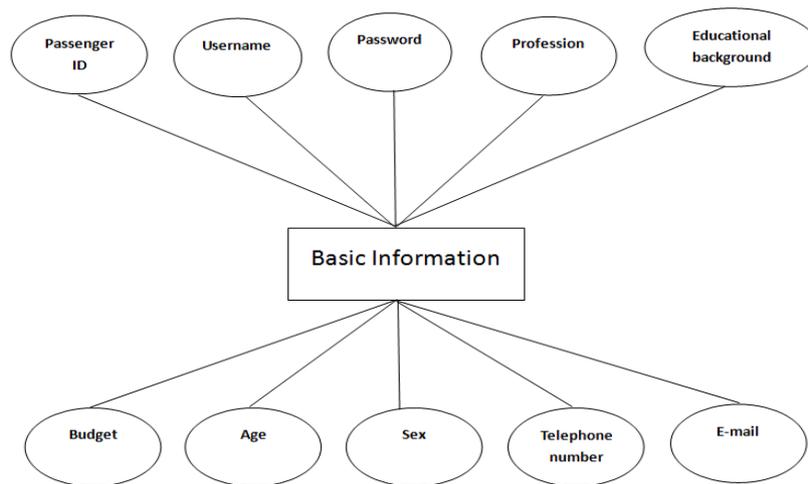


Figure 1 Basic tourist information model.

2.2 Interactive information between tourists and smart tourism terminals

After a visitor registers and logs in, the process of using the system is the process of interaction between the two. In this process, the visitor will leave a footprint of accessing the system. By analyzing these footprints, we can judge the needs and preferences of the visitor. Therefore, When designing the database, you can use the storage function of the database to save such information, creating favorable conditions for analyzing the needs and preferences of tourists. Common interaction information includes the following categories:

(1) keywords; (2) frequently viewed pages; (3) time spent browsing pages.

At the same time, some tourists will leave their suggestions in the system. From the above analysis, we can see that interactive information is an important source of information for analyzing the needs and preferences of tourists, and it should be considered when designing the database.

2.3 Tourist track information

Smart tourism can meet the needs of tourists to query their own browsing trajectories. At the same time, it can also provide tourists with tourist routes. Tourists can travel according to the tourist routes provided by the system, which helps save tourists time and bring tourists a good travel experience ^[1].

3.Design of Tourist Database Based on Smart Tourism

In order to make full use and management of the above-mentioned types of information, it is important to design a visitor database. Based on this, this article uses a unified form to summarize and describe the above information, and to express it at the same time.

3.1 Basic information form for tourists

According to the analysis above, the visitor information is composed of multiple parts, and the visitor database should include these aspects of information, as shown in Table 1.

Table 1 Basic information of tourists.

Field name	Category and length	Whether to allow null	Data integrity	Remark
User ID	Nnumber (12)	NO	Primary key	Numbering
User NAME	Varchar2(12)	NO	Only	Name
PASSWORD	Varchar2 (16)	NO		Password
SEX	Char (2)	NO		Sex
AGE	Number(3)	NO		Age
PHONE	Number (11)	NO		Tel number
E-mail	Varchar2 (30)	NO		E-mail

3.2 Tourist track data table

The tourist database has the following characteristics: (1) the number of tourists is large; (2) the tourist attractions are many; (3) the tourist time is long.

Because of this, the tourist location information data is huge, and the tourist database needs to store and manage such information. In particular, the trajectory data also includes POI information. In order to further improve the speed of retrieval, and can query and retrieve information from multiple levels.

For example: time periods, attractions, or tourists, it is important to effectively design trajectory data storage methods. Therefore, the tourist database needs to maintain the trajectory data table. In the trajectory data table, the primary key is the trajectory number, and the foreign key is the tourist number. The index position is the trajectory start and end time and the attraction number. In short, The index needs to be based on three fields. In this way, tourists can obtain the geographic information of the track points through the smart tourism system. During the travel process, tourists will upload their own trajectory information to a database. The database will store these information in categories, such as: stored by date, stored by attractions, and stored in temporary files. The trajectory data is uploaded to the data table, which makes it a record. In this way, a tourist's movement trajectory in the scenic area can be effectively stored, so that the tourists and the scenic area can make full use of the information, and the tourist can also use the system to query their own trajectory, and based on this, plan a more reasonable tourism line.

In addition, the amount of data in the tourist track data table will continue to increase. In order to maintain the speed of retrieval and management, you can set the table partition and set the partition key to the attraction number. According to the location of the attraction, the tourist track is recorded in different tables. data. At the same time, refine the scope of the partition, and continue to partition according to the year ^[2].

4.The Relationship Between Visitor Data and POI Data

4.1 POI classification of scenic spots

The so-called POI refers to the point of interest. Substituting it into a scenic area means some special geographic objects. The POI database can provide information on points of interest and independent points of interest, such as quantity information and information richness. Therefore, whether the design of the POI database is reasonable is related to the application effect of the smart tourism platform. In short, the more information provided by the POI database Rich, the higher the service quality of smart tourism platforms, the higher the satisfaction of tourists will be with it ^[3]. This article divides the scenic spot POI points into eight types based on the six elements of smart tourism, as shown in Table 2.

Table 2 Smart Tourism POI Classification.

Coding	Name	Details
01	Landscape	Natural landscape, historical landscape, cultural landscape
02	Food	Chinese food, restaurants, fast food
03	Shopping	Shopping malls and supermarkets
04	Accommodation	Hotels, tourist areas, guest houses
05	Entertainment	Swimming pool, park, museum
06	Traffic	Subway station, bus station, highway
07	Landscape Services	Services, consulting platforms, public toilets

4.2 Database structure

Based on the above-mentioned smart tourism points of interest, the database structure is designed, including the number of points of interest, the names of points of interest, the coordinates of points of interest, and the points of interest. Other services for tourists need to be considered, for

example, tourists' needs for food, clothing, and transportation may depend on external business services. Therefore, addresses and phone numbers need to be designed to be empty^[4].

4.3 Association between POI and visitor database

The description of tourists' data is the role of the tourist database, and the scenic area data is the focus of tourists. This type of data is the so-called POI data. POI data can meet the tourist service needs of tourists. Tourists can use mobile terminals to open tourist maps. The tourist maps based on the POI database are very complete, such as: zoom out, zoom in, move, and search. Tourists can use these functions to develop Travel routes and query the coordinates of the tourist points [5]. At the same time, POI also has a nearby search function, and tourists can search for their own attractions within a specified range. After the tourist enters the tourist scenic area, the system will push the tourist information for the tourist according to the tourist trajectory information and basic information. For example: for tourists who like photography, the system may recommend some scenic spots for them; for some tourists who like historical monuments, the system may recommend some sights full of age. In addition, the system also recommends some notification information, such as: a certain attraction is being maintained, and it is temporarily closed to the public, etc. to save tourists' time and prompt tourists to re-plan their tourist routes. During the tourist process, tourists can also record tourist routes, providing other tourists with convenient conditions.

5. Application Example Analysis of Smart Travel System

Dujiangyan Scenic Spot has applied the smart tourism system, which has achieved good application results. The Dujiangyan Scenic Spot is located in the western part of Sichuan Province in China. It is a famous water conservancy project in ancient China and has become a famous tourist scenic area in modern times. Because it is located in the Yangtze River Basin, the scenery is pleasant and attracts a large number of tourists every year. This article collected the POI data of the scenic spot by consulting relevant data and uploaded it to the POI database. Then use cesium software to display 3D models and maps, then use ASP.NET to write services, and finally use IIS to publish the services.

5.1 Experimental running environment

The running environment of this experiment includes two parts, specifically the client and server. In order to meet the smooth display of 3D scene data, the selected client configuration includes 4 8G memory modules, 1 500G solid-state hard disk, 1 1080 graphics card, and 1 i7 processor. The server configuration is one i5 processor, two 4GB memory modules, one 640GB hard disk, and one 1050 graphics card.

5.2 Experimental analysis

When registering, tourists need to fill in basic information, including name, password, gender, age, and email address, as shown in Figure 2. At the same time, tourists can also fill in travel needs and preferences. In order to reduce the boredom of tourists, three inquiry methods have been designed to provide tourists with more choices. After the tourists have made their choices, the information will be stored. When tourists use the system to search for attractions, they can directly enter the content in the blank bar. In this way, tourists can obtain the required attractions information.

Username	<input type="text"/>
Password	<input type="text"/>
E-mail	<input type="text"/>
Date of birth	<input type="text" value="Month / Day / Year"/>
Sex	<input type="text"/>
Tel number	<input type="text"/>
educational background	<input type="text"/>
profession	<input type="text"/>
Budget	<input type="text"/>
Ways to travel	<input type="text" value="picking"/>

Figure 2 Information registration page.

If the tourist does not know the surrounding information and needs to use the nearby search function, he can click the property to query to determine his location and the surrounding attractions. Visitors can also upload their own trajectory information in the database and conduct real-time queries.

6. Conclusion

In summary, in the era of big data, smart tourism has ushered in development opportunities. With the popularization of various advanced technologies, various types of wisdom concepts have continuously emerged since the 21st century. The proposal of the concept of smart tourism has promoted the development of the tourism industry. In order to provide tourists with personalized tourism services, it is required that tourist scenic spots grasp the tourist preferences and needs of tourists, and designing a tourist information database is an important way to achieve this goal. Therefore, based on smart tourism, this paper designs a database with both flexibility and practicability. The application results show that the database has a good application effect and is worth promoting.

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