Mass Tourism Data Analysis API Based on E-Commerce Platform

Xiaoyin Yin¹*, Jiangnan He², Ying Gao³ and Jingxian Li¹

¹Lanmei School, Yunnan Minzu University, Kunming 650000, Yunnan, China
²Business School, Yunnan University of Finance and Economics, Kunming 650221, Yunnan, China
³People's Armed Forces College of Yunnan Minzu University, Kunming 650000, Yunnan, China

*Corresponding author e-mail: yxy@ynni.edu.cn

Abstract. With the rapid development of Internet information technology, e-commerce transactions are accepted and known by more and more people, and more and more attention is paid by major enterprises. This paper mainly studies the design and implementation of mass tourism data analysis API based on e-commerce platform. The software system of this paper adopts the method of black box testing, which basically covers the main business logic of each functional module. The class and method of task scheduling, monitoring alarm and API gateway service module are tested, which basically covers the logic of class method of these modules. The system performance test is mainly to test the system by recording test script by automatic test tool. In this paper, the system response speed, concurrency and stability index are tested by using the automatic test tool load runner. The data shows that when the number of API requests reaches 4200, there will be a certain number of requests failed to respond to processing. The results show that the system has achieved the design goals in advance and basically completed the requirements listed in the requirements.

Keywords: E-Commerce Platform, Mass Tourism, Data Analysis, API Design

1. Introduction

With the continuous development of information technology, all walks of life are building their own information construction platform, especially in today's country vigorously promoting the development of information technology, data exchange between systems has become increasingly frequent. At the same time, for some industries with high information security requirements, such as banking, finance, ticketing, insurance, etc. The security of data in network transmission is also a factor that must be considered in the construction of open API.

The birth of mobile Internet promotes the Internet to enter into production, life and sales fields [1]. The most significant difference is that the PC end represented by desktop computer and notebook computer is migrated to the mobile port represented by mobile phone and tablet [2]. After consumers confirm the purchase of products, the transaction currency flows to the merchant account through the...
platform [3]. Therefore, the timely, safe and convenient arrival of funds is the key to the success or failure of the transaction [4]. For e-commerce, the establishment of capital flow platform is very important [5]. A system may have many hierarchies, so there are many interfaces at different levels. If each interface is tested separately, the time and manpower consumption is large, and the number of use cases is large, and the maintenance cost of use cases is very high [6-7]. In the process of evolution, too fast strategic evolution may cause the platform to fail without strategic foundation, and learning and imitating the strategy of competitors may also cause homogenization among platforms and strategic failure [8-9]. Therefore, the choice of the evolution mode and the evolution rate to adjust the strategy has become the key to the strategic management of digital commerce [10].

The emergence of e-commerce has broken the previous mode of enterprise internal or external communication through telephone, mail or fax. It enables enterprises to closely connect upstream suppliers, downstream customers and internal employees through e-commerce, so as to operate business efficiently and even expand business. By studying the change law of spatial objects in the time dimension, we can dig out the knowledge and information contained in the process of space-time evolution, so as to provide effective decision support for urban informatization construction. If we can build a platform to let each enterprise trust the data, we can analyze the data in the field from a higher perspective, and promote the technological innovation of the industry.

2. E-Commerce Platform and Data Analysis

2.1. E-Commerce Platform
When consumers patronize the community e-commerce platform, they not only conduct purchase activities, but also conduct frequent social interactions with other people, such as one-on-one private chats and topic discussions. In this way, the community e-commerce platform essentially provides consumers with a spatial scene of social interaction; social presence itself is the study of how people perceive each other's existence in a virtual network environment, thereby motivating consumers to interact with others.

2.2. Mass Tourism Data Analysis
Tourism destination is a complete individual, and the performance is also a comprehensive concept. It is unreasonable to evaluate things only by single index. We must consider the problem from the overall point of view, and the multi index comprehensive evaluation system is essential. The multi index comprehensive evaluation system is to combine the multi index information of different aspects of the research object at different levels, which requires multiple indicators, which will inevitably lead to the diversity of selected data sources. The system needs data analysis function, which can analyze the production data of enterprises in real time, excavate the deep value of data, so as to guide enterprises to make accurate decisions. Data analysis includes data preparation function and analysis project management function of user data analysis. Analysis project is used to manage user's new data analysis project.

The degree of relevance $K_j(M_x)$ of the object to be evaluated $M_x (x = 1,2,3,...,n)$ on level j is:

$$K_j(M_x) = \sum_{i=1}^{m} w_i K_j(v_i) \quad (1)$$

The expression for standardization of dispersion is as follows:

$$Y_j = \frac{X_j - \min X_j}{\max X_j - \min X_j} \quad (2)$$

The processing step for negative indicators is to subtract the observed value from the maximum
value, and then divide by the deviation of the variable, expressed as follows:

\[ Y_j = \frac{\max X_{ij} - X_{ij}}{\max X_{ij} - \min X_{ij}} \]  

(3)

3. Mass Tourism Data Analysis Experiment

3.1. Experimental Environment

The API system of e-commerce platform contains many businesses, and the logical structure is very complex. It needs to communicate with the connected businesses and users based on the platform. Therefore, the development environment is slightly complicated, including the automation tools and development test environment developed by the company itself. The experimental environment is shown in Table 1.

| Development tools | Eclipse3.2, JDK1.6 |
|-------------------|--------------------|
| Development language | Java |
| Database | MySQL5.5 |
| Web server | Tomcat6.0 |
| Version management | SVN1.6 |
| Operating system | Windows7 |
| Server system | SUSE Linux |
| Browser | IE, Firefox, Chrome |

3.2. API Test

The software system of this paper adopts the method of black box testing, which basically covers the main business logic of each functional module. The class and method of task scheduling, monitoring alarm and API gateway service module are tested, which basically covers the logic of class method of these modules. Simulation of the corresponding input data and output data, trying to solve the problem that the test results do not meet the functional description of the requirements document, and finally get the test results that meet the expectations. In this paper, the system response speed, concurrency and stability index are tested by using the automatic test tool load runner.

4. Discussion

4.1. Test Results

In this paper, according to the number of entries of type information in each API description, several groups of experiments are carried out. The experimental results are shown in Figure 1. From the experimental results, if there are two or more types of information in an API description, the API book recommendation effect will be significantly improved. On the other hand, if the input API description does not contain type information, then the effectiveness of the proposed algorithm recommendation API will be reduced accordingly. As can be seen from the figure, the overall accuracy rate of this algorithm is 0.54, and the overall recall rate is 0.73, both values are not particularly high. By analyzing the accuracy of different types of expression, we can see that array type and implicit expression type have lower recall rate. Nine specific test cases are used to judge the peak value of API gateway service module in processing user requests. When the number of API requests reaches 4200, it will be found that a certain number of requests fail to respond to processing, which is less than the expected 4500qps of API gateway's non functional requirements. Finally, the API gateway is stress tested and regression tested by means of version iteration, cache structure optimization and related algorithm optimization. Finally, the target value specified by non functional requirements in the system requirements analysis phase is confirmed. The comprehensive evaluation score shows that all and all kinds of tourism
resources have significant spatial and regional differentiation characteristics, and show different agglomeration trends. In contrast, the most obvious reason is that tourism resources and tourism resources are not affected by tourism resources and tourism resources, The main reason is that the spatial distribution of human tourism resources is directly affected by natural geographical factors, and the role of social and economic factors is relatively small.

![Figure 1. Experimental results](image1.png)

After the data processing task is triggered, it is decided whether to process the data according to the settings of the group and research space by the administrator. The analysis results generated after processing will be saved to the database or saved to the server in the form of JSON file. In the community e-commerce, consumers lose this kind of face-to-face sensory stimulation. Instead, they stimulate consumers to realize the presence of others by experiencing the external characteristics of design. After obtaining four key elements from the design, consumers form a pure sense of social presence, namely, sense of reality, sense of co-existence, psychological involvement and behavioral fit. In addition, the e-commerce platform provides consumers with a pure sense of social interaction and social interaction. The comparison of RMSE effects is shown in Figure 2. When the nearest neighbor parameter is 40, the mobile recommendation algorithm reaches the minimum value of 0.7642, which shows that the mobile recommendation algorithm can filter out some noise information, so that the mobile recommendation algorithm can achieve the best recommendation effect when the nearest neighbor parameter is 40. From the perspective of resource attractiveness, the spatial autocorrelation coefficient I and Z of the scores of various tourism resources are uneven, and the p value is greater than 0.05. From the point of view of all and leisure tourism resource points, the resource attraction scores of the two types of tourism resources show that they have the characteristics of extremely low degree aggregation in the spatial distribution, while the natural resources and human resources points have the characteristics of low degree dispersion in the spatial distribution.

![Figure 2. Comparison of RMSE effects](image2.png)
4.2. E-Commerce Platform Performance Analysis

In the traditional society, people obtain their status and identity mainly through bestow and inheritance. The identification of people's status is mainly based on the birth, lineage, caste and class composition of an individual, but less on consumption. In order to obtain a higher status, people pursue, obtain, display and service one after another, because they have more and represent higher social status, people can obtain corresponding higher social status. The analysis of urban passenger flow is shown in Table 2. Through the statistical analysis of these information, we can clearly get the trend of passenger flow of cities and scenic spots, and do data support for the possible business in the future. According to the permission design scheme, the report authority will use Linux system permission directly. When a user is created, a role is assigned to the user, that is, a user group. The user is also a Linux system user, and a folder of his own will be created on the Linux server. In addition, the report can be stored in the Linux system with different permissions. The final judgment is whether it is consistent with the expected index of non functional design of the system. If it fails to meet the expectation, the concurrent operation ability of the system can be improved by means of performance optimization, and finally the reliability and stability of the system can be improved. When the sample data is not evenly distributed or the sample data is too small, it is easy to over fit. If the sample data set cannot be expanded, the adjusted regularization term can be used to reduce over fitting. At the same time, because the model can not be well applied to the actual data classification at this time, we can detect the skewness of the model dataset before constructing the classifier model, view the skewness values of each feature vector of the sample set, and eliminate the features with large skewness value, so as to avoid errors in the model training process and reduce the model performance.

| Table 2. City passenger flow analysis |
|--------------------------------------|
|                                      |
| First quarter | 18.5 | 17.4 | 16.2 | 18.7 | 16.3 | 19.2 |
| Second quarter | 25.8 | 28.4 | 26.3 | 27.1 | 23.8 | 26.3 |
| Third quarter | 23.4 | 22.8 | 26.1 | 25.9 | 23.7 | 24.7 |
| Fourth quarter | 27.9 | 28.4 | 26.1 | 23.5 | 22.8 | 26.1 |

5. Conclusions

In this system, the use of data crawling technology and data analysis technology, at the same time, through the reading of database information, the content analyzed and obtained is presented to the system page, which is convenient for users to view and use.

In this paper, the theory and data mining analysis technology are combined, and for specific practical problems, quantitative data analysis and qualitative problem analysis are unified to achieve the research purpose of solving practical problems.

In this paper, the system function is defined as user behavior analysis, data analysis and background management, from user data analysis to data source management, real-time monitoring of tasks, to ensure that the whole process from data acquisition to final analysis and display has detailed functions to ensure the orderly progress of the whole process.

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