



Social Network Real Estate Advertisement Push Method Based on Big Data Analysis

Yun Du¹(✉) and Xuanqun Li^{2,3,4}

¹ The University of Manchester, Manchester 999020, UK
duyun332@163.com

² Institute of Oceanographic Instrumentation, Qilu University of Technology (Shandong Academy of Sciences), Qingdao 266061, China

³ Shandong Provincial Key Laboratory of Marine Monitoring Instrument Equipment Technology, Qingdao 266061, China

⁴ National Engineering and Technological Research Center of Marine Monitoring Equipment, Qingdao 266061, China

Abstract. In order to solve the problem of large-scale user attribute identification of real estate advertising push, a social network real estate advertising push method based on big data analysis is proposed. First, according to the real estate advertising push strategy of social networks, it is refined and implemented level by level, focusing on specific target customer groups. Given the initial link of the original blog of the advertiser, the text features of the real estate advertising project are extracted by extracting the basic information of all the blogs in a circular manner. Secondly, analyze the social relations of users, mine the characteristics of social network users based on big data analysis, realize the classification and recognition of user attributes, and calculate the similarity between the two using similarity calculation formula. Finally, the calculation results are sorted in reverse order of similarity to generate a real estate advertisement recommendation list for users. The design method is tested on the epinions data set, and the test results show that the design method can improve the accuracy of recommendation and reduce the overall running time.

Keywords: Big data analysis · Social network · Real estate advertising · Advertising push · Text features · User features

1 Introduction

Real estate is a real economy, not a virtual economy, that builds real physical houses to meet social needs. Real estate transactions are accompanied by capital flows. The objects of transactions are physical assets. The cycle for completing transactions is at least one or two years, at most three or five years, or longer. With the development of computer technology and the substantial increase of Internet users, the data volume is growing exponentially. More and more customer data can be mastered and used by enterprises. People are in the era of big data. Following cloud computing and the Internet of things,

big data has triggered another technological revolution in the digital economy industry, redefining the decision-making methods and results at different levels of the country, enterprises and individuals. The “high inventory” of the real estate industry nationwide makes real estate marketing more and more difficult. In the context of increasingly squeezed profit space, reducing marketing costs and seeking new profit growth points are the challenges faced by real estate marketers. The development of mathematical science has also helped the development of big data, collecting and mining big data from multiple platforms and applying mathematical algorithms and models for analysis. Big data analysis provides the basis for the prediction and decision-making of enterprise management, can accurately and effectively position the target market, focus on the target customers, and can achieve more accurate results in marketing work. The convenience and efficiency of the Internet are accelerating. This trend has also brought some enlightenment to real estate projects, marketing changes and service innovation. Internet enterprises are pioneers of big data applications, not only optimizing existing businesses through data, but also accelerating data-driven business innovation. Encouraged by the government and driven by the market, a large number of traditional enterprises have opened up the Internet market, and a large number of brand-new Internet enterprises have appeared in the favor of capital for Internet enterprises. The rapid increase of Internet enterprises has brought exponential growth of data volume. In this regard, the development model of the combination of Internet and industry provides the necessary conditions for the smooth transformation of real estate enterprises in the new economic environment. At the same time, consumers are increasingly pursuing diversification, customization and personalization of products, which also puts forward higher requirements for the development of enterprise marketing and the overall strategy of enterprises. How to accurately find customers who need to buy houses and match the real estate products developed by enterprises has always been a difficult problem for traditional marketing.

Reference [1] proposes an Internet advertisement push method based on personalized analysis. Starting from the overview of personalized advertisement recommendation, it analyzes in depth the key technologies of personalized advertisement recommendation in recent years, including data collection and preprocessing, user preference acquisition, personalized advertisement recommendation technology, etc. This paper statistically analyzes a variety of data sets and evaluation indicators used in personalized ad recommendation, and summarizes the current application of personalized ad recommendation in traditional Internet scenarios. Reference [2] proposes an advertising information push method based on user portraits, which uses big data technology to calculate user portraits and build effective research focuses. The information ontology extraction method based on user portrait realizes intelligent user portrait construction and completes the push of advertising information according to the different contents such as object, time and behavior. Reference [3] proposes an art advertisement push method based on user behavior information, which uses a similarity algorithm to calculate the similarity of user browsing media content, and obtains user behavior characteristics, that is, the user’s preference for content. The threshold is set, and the content is regarded as the same cluster when the content similarity is above the threshold, and the classification of the content cluster of the user behavior information is completed. The freshness and dispersion of user behavior in the effective cluster are calculated, and the final weight of the effective

cluster is obtained by combining the freshness factor. Finally, the final weight of the effective cluster and the user's preference for content are used to calculate the artistic advertisement push score, and the advertisements are sorted to select the advertisements suitable for the user. Although the above method can complete the push of advertisement information, it has the problems of long running time and low accuracy when directly applied to the push of real estate advertisements.

The real estate platform is to build a transaction bridge between buyers, sellers, housing sources and other parties. The real estate transaction market involves the new house, second-hand house and rental market. As one of the research hotspots of contemporary sociology, social networks are widely used in anthropology, epidemiology, biology, communication, economics, geography, information science, social psychology and other fields. Together with other complex networks, social networks promote the development of new fields of network science. With the launch of social networking platforms such as Weibo, wechat, easy to believe, anjoke and SouFun, and the popularity of mobile app applications, customers have increasingly recognized online access to real estate project information and sales services. The focus of applying big data analysis technology to precision marketing is to change the marketing perspective, focus on customer consumption behavior and preferences contained in data information, and comprehensively plan the marketing system. This paper proposes a social network real estate advertising push method based on big data analysis, which can effectively mine the value of data information and seek the sustainable development of real estate enterprises in the market through precision marketing.

2 Social Network Real Estate Advertisement Push Method Based on Big Data Analysis

2.1 Analysis of Social Network Real Estate Advertisement Push Strategy

Big data marketing innovation requires companies to match their ideas at the strategic level. These matching from small to large should cover key strategic elements such as data capabilities, decision-making models, strategic orientation, and organizational culture, and should clarify the matching process and dynamic evolution process between key strategic elements and innovation focus points. Only accurate information can make the dissemination more effective. The traditional push method cannot support the information push because of the inability to accurately push the scope, and instead it becomes a flood of spam. The main reason is that it lacks the support of customer characteristic data and cannot conduct detailed and accurate analysis. Customers are the starting point and end point of marketing activities. Enterprise big data marketing should establish the concept of customer participation in the whole process, especially to explore the customer demand level, which has an important impact on promoting the reform of marketing concepts. The design of the marketing plan needs to be guided by the marketing goals, and be refined and implemented step by step, and finally focus on the specific target customer group. Only by focusing on it can the efficiency of marketing be maximized. Then design targeted marketing campaign ideas (for example, product combination, channel selection and pricing, etc.) according to the target customer group

to form the final marketing plan. The advertising push strategy of real estate enterprises is shown in Fig. 1.

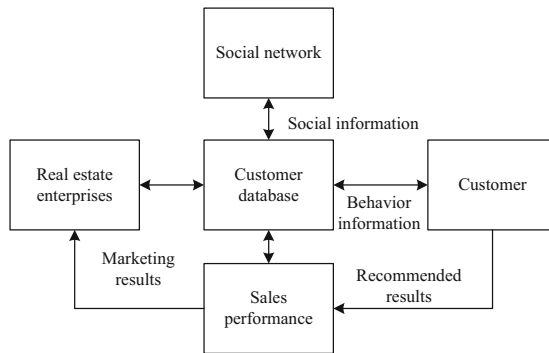


Fig. 1. Advertising push strategy of real estate enterprises

Analyze users' social relationships to distinguish between strengths and weaknesses and build a graph. Taking Weibo as an example, people only follow bloggers that interest them. After following, Weibo will recommend other bloggers in the same field, which is easy to attract users' interest. A social network is a structure composed of a set of binary relationships between social actors and social interactions among social actors. Social network theory helps to study the relationships between individuals, groups, organizations, and even entire social units in the network. A social network can be represented by a graph, social actors are represented by nodes in the network, and the relationship between nodes represents the interaction between social actors. It is important to note that customers are changing, and the design of the marketing plan needs to have a certain width of execution and needs to observe the dynamics of the customer group in real time, so that the developed marketing plan can be effectively implemented. Weibo is a kind of weak-relationship social interaction. The interaction and intersectionality depends on the social behavior of bloggers. The social heterogeneity among users is strong, and the probability of being converted into target customers is low. QQ groups and WeChat Moments belong to strong social relationships, and their social networks are more homogenous, and have a higher probability of being converted into target customers. Social influence is the result of the multiplication of the three variables of individuality, directness and the number of influence sources, and increases with the increase of each variable. If one of these three variables is 0 or significantly lower, the overall social influence of the node The force will be affected, expressed as:

$$Z(a) = f(H, C, S) \quad (1)$$

In formula (1), a represents the social network node; $Z(a)$ represents the overall social influence of node a ; f represents the mapping relationship between individual nodes; H , C , and S represent the individuality, directness, and number of influence sources of the node, respectively. The strong relationship network is usually constructed by the user's friends, relatives and other people who have acquainted in reality, and the

number is limited. In the weak relationship, there are not only friends of friends, but more strangers who do not know each other, forming a huge social network. Information can be It spreads rapidly in it. The dynamics and complexity of social networks make it impossible to obtain direct and accurate information. Therefore, we can only improve the dissemination efficiency of social influence from the perspective of individuality and the number of influence sources. With the support of big data, the screening of high-quality customers will be quick and accurate. For example, customers' browsing footprints on various shopping websites can determine the products they care about recently, and their life and work dynamics can be observed from their consumption conditions. By using the correlation analysis method, enterprises can obtain key target customer resources. In big data mining, customers' basic demands for privacy protection should be met, and attention should be paid to the exploration and utilization of customers' core values and the cultivation and transformation of customer behavior. The R&D and event planning based on a full understanding of customer needs can meet customer expectations for products, cater to customer needs, and truly achieve customized marketing that suits them.

2.2 Extracting Text Features of Real Estate Advertising Items

Based on the information boundary theory, this paper defines the consumer information boundary as the extent to which consumers allow advertisers to use consumers' personal network data, that is, the precision of online advertising. With the continuous improvement and development of Weibo, more and more users use Weibo to obtain news, and its platform has a lot of valuable user information, which has high research value and commercial value in today's Internet industry. On the one hand, the precision of online advertising will bring convenience to consumers in shopping and have a positive impact on consumer utility; on the other hand, it will cause consumers' privacy leakage concerns and have a negative impact on consumer utility. Utility determines its demand for goods, which in turn affects the profit effect of online advertising. The precision of online advertising requires advertisers to invest more costs, which affects the overall cost of online advertising. Generally speaking, the network service platform provides users with http request links. Users need to fill in the request parameters and the signature provided by the platform, and send the request to obtain service data. The real estate advertising data is generally a JSON object. This paper mainly uses Weibo advertisements to extract the text features of real estate advertisement items. The original text-based blog post information includes the blog post content, publication time, the number of likes and like lists, the number of retweets and retweets, and the number of comments and comment lists. In order to collect the data set of the network service, first collect the data of the third party as the data of the input interface of the service, and then encapsulate the http request provided by the platform based on the Java language, which is convenient to fill in the request parameters, obtain the service data in batches, and store the final running data. A dataset of input interfaces into the service [4]. Given the initial link of the advertiser's original blog post, extract the basic information of all blog posts through a loop. The process of obtaining the text of real estate advertisement items is shown in Fig. 2.

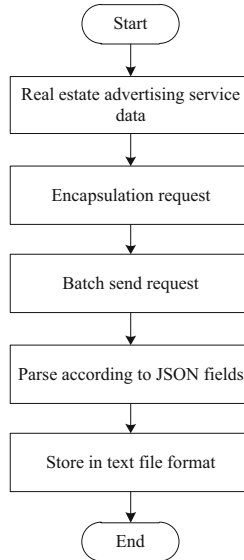


Fig. 2. Extraction process of real estate advertisement item text

Use fastjson to parse the returned JSON object according to the JSON fields, and write the data of the same JSON fields obtained in each request into the same file as the service output interface dataset [5]. Both the input dataset and the output dataset are stored in a text file format. After obtaining all microblog text data, this paper uses Chinese text cleaning technology to remove non-text data in the text. After analysis, the data collected from the Weibo platform contains a large number of HTML tags, text hyperlinks, and some special symbols. This article uses regular expressions to replace these non-text data with null characters. Extract some keywords of the text and convert the keywords into word vectors, then TEXT can be represented by a set of multiple word vectors, each word vector is a 200-dimensional real vector, namely:

$$X = \{\beta_1, \beta_2, \dots, \beta_M\} \quad (2)$$

In formula (2), X represents the text vector; β represents the keyword vector; M is the number of keywords. The keyword vector can be represented in the following form:

$$\beta_M = [\varphi_1, \varphi_2, \dots, \varphi_N]^T \quad (3)$$

In formula (3), φ represents a real vector; T represents a transposed matrix; N represents the dimension of the vector. Use Chinese word segmentation technology to achieve word segmentation. Considering the different abilities of articles expressed by different parts of speech, this paper selects “noun”, “verb”, “adjective” and “adverb” to express the main content of the article. The centroid of the word vector is calculated as the vector of the text [6]. The average value of each dimension value of all keyword

word vectors of the centroid, namely:

$$p(X) = \left[\frac{\sum_N \varphi_1}{M}, \frac{\sum_N \varphi_2}{M}, \dots, \frac{\sum_N \varphi_M}{M} \right]^T \quad (4)$$

In formula (4), $p(X)$ represents the centroid of the text vector X . In order to make word segmentation more accurate, this article adds a user-defined dictionary, which mainly includes the latest words and names of people and things. A user-defined dictionary is a text file. The text file should not only include words, but also be marked with the part of speech of the word. Each word occupies a line, and all words are arranged in lines [7]. This article calls the `ImportUserDict` function in the `pynlpir` package to import the user-defined dictionary. The parameter of this function is the path of a text file.

2.3 Mining Social Network User Characteristics Based on Big Data Analysis

As the number of products used by users increases, if the user's utility in the product increases, it reflects the direct network externality, and if the number and effect of the product's complementary products also increases, it reflects the indirect network externality. According to the similarity of customer characteristics, customers are divided into several subgroups. The internal characteristics of each group are similar, but there are obvious differences between groups. Only by distinguishing different customer groups can we carry out targeted marketing, develop and provide products and services that are aligned with customers. Real estate companies obtain data through big data collection technology, and the sources of data are mainly divided into two parts: intranet and extranet. The extranet mainly captures housing rental and sales information and transaction information from urban housing construction committees and competing websites to provide data support for real estate market research. Before the support of big data, traditional analysis methods, such as demographic factors and geographical factors, can only provide a relatively vague customer profile and cannot achieve customer segmentation in the true sense, so precision marketing cannot be carried out smoothly [8]. The intranet mainly obtains user preference information from the websites of real estate companies, including price, area, apartment type, time, etc., on the one hand, to provide data for market research, and on the other hand to provide data support for marketing products. The main attributes of customer behavior pattern analysis are shown in Fig. 3.

The user interest mining method based on big data analysis is mainly divided into three steps: The first step is to use Python web crawler technology to obtain the target user's watch list, and add the Weibo IDs of the five users with the largest number of followers in the watch list. User collection. These user portrait tags are calculated based on the user's browsing preferences, which facilitates the communication between sales and users and improves communication efficiency. If the customer contacts multiple consultants, the recommended properties that meet the user's expectations will be more trusted by the user. Similarly, obtain the target user's fan list, and add the Weibo ID of the five users with the largest number of fans in the fan list to the user set. It should be noted that the variable elements of customer analysis are not static and need to be updated and optimized at any time according to market changes. The user portrait contains the user's

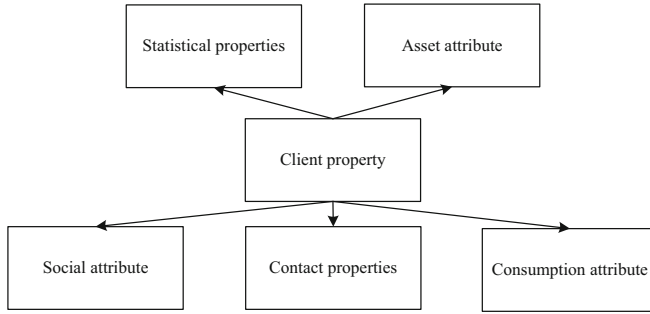


Fig. 3. Customer attributes

information, channel sources, areas of concern, real estate of interest, area of interest, and recommended time. According to the user's microblog ID in the user collection, the original text-based blog posts of these users in the database are retrieved and formed into a large document. When the user scale exceeds the critical value, it will strengthen the advantage of the number of products on the user's utility, thereby affecting consumers' purchase of products, and this has become the cause of network externalities that people are more concerned about. To achieve the fusion of the three user interest lists, the most important thing is to merge synonyms, that is, to calculate the similarity between two words and combine the two words whose similarity is greater than a certain threshold into the same word [9]. Big data analysis can filter out valuable information from massive, complex and unrelated customer data. The conceptual semantics of a content word consists of four parts: similarity of basic semantic descriptions, similarity of other basic semantic descriptions, similarity of relational semantic descriptions, and similarity of symbolic semantic descriptions. The formula for calculating the similarity of two words is as follows:

$$\gamma(\beta_1, \beta_2) = \sum_4 \lambda_j \prod_4 \eta_j \quad (5)$$

In formula (5), $\gamma(\beta_1, \beta_2)$ represents the similarity between the two words β_1 and β_2 ; λ_j represents the preset parameter; η_j represents the conceptual semantic similarity of the content word; j represents each part of the semantic composition. Accurate analysis and judgment of customer behavior patterns and value through precise segmentation technology is the mainstream method in the field of customer segmentation. The formula for calculating the similarity between semes is as follows:

$$\vartheta(\mu_1, \mu_2) = \frac{\nu}{\nu + D} \quad (6)$$

In formula (6), $\vartheta(\mu_1, \mu_2)$ represents the similarity between the two semes μ_1 and μ_2 ; ν represents the adjustment parameter, which is 1.5 in this paper; D represents the distance between the two semes. Mining and vectorizing user interests from user behavior records using big data analysis. According to the evaluation result of customer value, carry out value positioning to customers, and determine customer level classification. The variables of customer value positioning include: customer's current living

situation, family demographics, occupational characteristics, family annual income, purchasing needs, source channels, etc. [10]. The third step is to use the Chinese text mining preprocessing technology to clean the text of the document and use the Chinese word segmentation technology to perform word segmentation, and then convert the segmented text data into word vectors using the bag of words model, and then use the LDA topic model to mine the document's content. Topic and topic keywords, so as to obtain a set of user interests based on social relations. According to different real estate projects, match customer value and customer positioning with the project, select the customer group that matches the project, and form a customer system. The customer hierarchy generated in this way will have a pyramid-shaped structure.

2.4 Design a Social Network Real Estate Advertising Push Model

The influence of social network users has a significant impact on the dissemination of advertisements. Understanding the influence dissemination mode among social network users can better understand the advertising recommendation process. The dissemination of rumors and the replacement of information in social networks are time-sensitive, especially when a crisis occurs, the news media must report quickly and timely, and advertising recommendations should also give full play to the timeliness, and push advertisements to the entire social network in the shortest time. At the consumer level, because the socialization of online advertisements has a positive impact on consumer utility, consumers should make more efforts to socialize online advertisements, such as online advertisements in the form of Weibo or WeChat Moments. Social interaction behaviors of online advertising, such as likes, comments, and retweets, to improve consumer utility and welfare, especially when consumer social preferences are high. The centrality and similarity of nodes in a social network have a profound impact on the dissemination of information in the network and the importance of nodes in the network. This section defines centrality as follows:

$$\chi(o) = \frac{|\omega(o)|}{\max(|\omega|)} \quad (7)$$

In formula (7), $\chi(o)$ represents the centrality of node o ; $\omega(o)$ represents the set of all nodes adjacent to node o (including in-degree nodes and out-degree nodes); ω is the length of all nodes in the statistical network. The influence of a node is not only related to the relationship between the node and neighbor nodes, but also the relationship between neighbor nodes. Personalized advertisement recommendation is to recommend advertisements that may be of interest to users based on their interests. In this paper, user interests are mainly manifested in two aspects. One is a user interest model constructed based on user-related blog posts, which extracts the user's interest features. One is the user's interaction record with real estate advertisements, which reflects the user's interest through the user-advertising score. Among the three social behaviors of liking, commenting and forwarding online advertisements, consumers should also focus on the social behavior of online advertisements. Especially for Weibo advertisements, users' likes on advertisements can best improve their consumer welfare. Relationships in social networks are complex and ever-changing, and two unrelated neighbor nodes

may become friends in the future. Advertising recommendation in social networks is based on the word-of-mouth effect of marketing. If there are more nodes with friend relationships among neighbor nodes around a node, it means that its neighbor nodes are more closely connected, and the probability of successful advertising recommendation is higher. In the three-dimensional advertising precision perception of browsing habits, positioning information and chat records, advertising precision based on user browsing habits has a positive impact on consumer utility, while advertising precision based on user positioning information has a negative impact on consumption. Utility. Calculate the similarity of users and obtain a set of similar users. The similarity of users is mainly calculated by the similarity of interest features between users and the similarity of scores between users. In a social network, the number of out-degrees of a node represents the number of neighbor nodes that believe in the node. The more out-degree nodes of a node, the more nodes that follow the node, and the greater the influence in the social network. When a node recommends advertisements to neighboring nodes, the higher the number of recommendable nodes, the larger the influence scope. According to the user interest feature vector of each user, the cosine distance formula is used to calculate the interest similarity between the candidate set user and the target user. Calculated as follows:

$$\zeta(q_1, q_2) = \frac{\sum_k q_1 q_2}{\sqrt{\sum_k q_1^2} \sqrt{\sum_k q_2^2}} \quad (8)$$

In formula (8), $\zeta(q_1, q_2)$ represents the similarity between user feature q_1 and item feature q_2 ; k represents the spatial dimension of the feature vector. Finally, the 10 users with the largest similarity are obtained according to the reverse ranking of users to form a set of similar users. On the basis of obtaining user characteristics and item characteristics, the similarity between the two is calculated by the similarity calculation formula, and finally the calculation results are sorted in reverse order of similarity to generate a recommendation list for users. Through the analysis of the existing data, after obtaining the characteristics of different customer groups, it is necessary to formulate targeted marketing strategies for each customer group based on the needs of the enterprise. In the process of formulating marketing strategies, staged marketing objectives are required. Such as cross-selling, increasing the number of customers, etc. So far, the design of social network real estate advertisement push method based on big data analysis has been completed.

3 Experimental Study

3.1 Experiment Preparation

In this paper, we evaluate the advertising push results of the designed method through experiments. The experiment tested the social network real estate advertising push method based on big data analysis on the Epinions data set. Epinions is a consumer review website established in 1999. In the website, users can read old and new reviews on various items to decide whether to buy items. The website uses a scoring mechanism to determine the reliability of each review. Users can also selectively establish

interactive relationships with other users. The development environment of this paper is as follows: the operating system is Windows10 64 bit operating system, the memory is 8g, the algorithm development language is python, Pycharm is used as the development environment, and the Scikitlearn toolkit based on Python is used for experiments. Because of the huge amount of data and the long running time, this experiment excludes the isolated nodes in the Epinions data set, and selects 10000 nodes out of 49290 nodes as the number of users receiving advertisements for the experiment.

3.2 Results and Analysis

Choosing a reasonable standard is of great significance to the scientificity of the experimental results. This paper evaluates the performance of the social network real estate advertising push method based on big data analysis from three aspects: recommendation accuracy, running time and user satisfaction.

The experimental results of this method are compared with those of reference [2] and reference [3]. The recommended accuracy results of 10000 user nodes are shown in Table 1.

Table 1. Comparison results of recommendation accuracy of 10000 user nodes

Testing frequency	Social network real estate advertising push method based on big data analysis/%	Reference [2] method/%	Reference [3] method/%
1	99.716	70.626	77.587
2	98.723	71.639	78.574
3	97.718	74.648	76.568
4	99.665	73.615	75.586
5	98.680	72.623	76.575
6	98.691	72.626	74.597
7	99.674	71.608	76.588
8	98.657	70.635	77.554
9	97.692	71.611	78.567
10	98.718	73.624	76.582
Mean value	98.79	72.32	76.87

In the test with 10,000 advertising user nodes, the average recommendation accuracy of the social network real estate advertisement push method based on big data analysis is 98.79%, which is 26.47% higher than the average recommendation accuracy of the reference [2] method, and is higher than the reference [2]. The mean recommendation accuracy of the method [3] is improved by 21.92%. Therefore, it shows that the method in this paper can improve the push accuracy of real estate advertisements.

The running time test results of 10000 user nodes are shown in Table 2.

Table 2. Comparison results of running time of 10000 user nodes (ms)

Testing frequency	Social network real estate advertising push method based on big data analysis	Reference [2] method	Reference [3] method
1	2506	2946	3174
2	2679	2988	3268
3	2785	3064	3350
4	2663	2926	3246
5	2620	2955	3387
6	2855	2977	3221
7	2787	3012	3102
8	2611	3120	3368
9	2642	3253	3297
10	2778	3179	3392
Mean value	2692.6	3042	3280.5

In the test with 10000 advertisement user nodes, the running time of the social network real estate advertisement push method based on big data analysis is 2693 ms, which is 349.4 ms and 587.9 ms shorter than the reference [2] method and the reference [3] method. With the increase of network scale, the running time of each advertising push method increases significantly, and the running time of the method designed in this paper is lower than that of the two comparison methods. The efficiency of the social network real estate advertisement push method based on big data analysis is verified on the real network dataset. The results show that the design method in this paper improves the push accuracy while ensuring the operation efficiency.

From the comparison results of user satisfaction shown in Table 3, it can be seen that the user satisfaction of the method in this paper is significantly higher than that of the two literature comparison methods. The highest user satisfaction of the method in this paper is 99.5%, the highest user satisfaction of the method in reference [2] is 59.3%, and the highest user satisfaction of the method in reference [3] is 62.4%.

Table 3. User satisfaction result (%)

Testing frequency	Social network real estate advertising push method based on big data analysis	Reference [2] method	Reference [3] method
1	95.0	58.6	59.6
2	95.6	58.7	59.3
3	97.2	57.5	57.5
4	96.2	53.6	58.0
5	98.8	59.3	58.1
6	95.4	56.0	59.9
7	97.7	58.1	61.7
8	99.5	55.2	62.4
9	98.6	57.4	60.5
10	96.3	58.6	60.8

4 Concluding Remarks

The real estate platform faces the characteristics of complex real estate transaction market and relatively long transaction cycle, which makes it necessary to deal with the storage, analysis and matching of massive housing listings, hundreds of millions of buyers and numerous sales information. How to quickly and accurately complete the above information Processing requires the use of big data analysis technology. This paper proposes a social network real estate advertisement push method based on big data analysis, which can improve the recommendation accuracy and reduce the overall running time. The user's interest is constantly changing with time, and this paper will construct a dynamic user interest model to extract user interest features in the follow-up research.

References

1. Zhang, Y.-j., Dong, Z., Meng, X.-W.: Research on personalized advertising recommendation systems and their applications. *Chin. J. Comput.* **44**(3), 531–563 (2021)
2. Hu, J.: Information intelligent push method based on user profile. *Wuxian Huliai Keji* **17**(19), 161–162 (2020)
3. Li, X.: Design of pushing mechanism of art advertising media based on user behavior information. *Mod. Electronics Techn.* **43**(1), 143–147 (2020)
4. Wang, C.: Design of web advertising intelligent push system based on visual information transmission. *Mod. Electronics Tech.* **43**(20), 160–163 (2020)
5. Zhihua, X., Yuying, L.: Video recognition and adaptive recommendation algorithm based on machine learning. *J. Shenyang Univ. Technol.* **44**(03), 336–340 (2022)
6. Chen, J.-x., Zhang, T.: Intelligent push simulation of interactive design based on data sparse feature. *Comput. Simulation* **37**(12), 166–170 (2020)
7. Wang, C.: Detection model of fake commercial advertisements on social network based on block chain technology. *Economic Res. Guide* (09), 44–47+95 (2021)

8. Tang, H., Zeng, J., Li, F., et al.: Point of interest recommendation based on location category and social network. *J. Chongqing Univ. (Nat. Sci. Ed.)*, **43**(7), 42–50 (2020)
9. Su, B., Liang, D.: Face face detection in advertising recommendation system based on face-eyes co-detector. *Comput. Technol. Developm.* **31**(7), 134–139 (2021)
10. Xun, Y.-l, Bi, H.-m, Zhang, J.-f: Heterogeneous social network recommendation based on weak ties. *Comput. Eng. Design* **42**(6), 1526–1534 (2021)