



Application of Data Mining Technology in Social Public Opinion Monitoring System

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Abstract. In order to understand the application effect of social public opinion monitoring system, the application research of a data mining technology in social public opinion monitoring system is put forward. Firstly, this paper analyzes the challenges and new features of data mining technology under the data environment, and the opportunities that data mining technology brings to social public opinion monitoring. Secondly, it explores the value and influence of data mining technology applied to social networking in public opinion monitoring. This paper deeply analyzes the data mining technology based on search engine network logs, and takes Google Trend as a case study. Finally, according to the advantages and existing problems of data mining technology applied in social public opinion monitoring, it puts forward the countermeasures of data mining technology applied in social public opinion monitoring.

Keywords: data mining technology · Social public opinion · observation system

1 Introduction

Social public opinion monitoring plays a huge technical support role in government reform and improving the level of public management. Facing the functional transformation of our government to a service-oriented government and the current national situation where the contradictions at the grass-roots level are prominent, how to realize zero-distance communication between the government and the people (government) and how to guide, supervise and evaluate these communications reasonably and correctly has become a major challenge at present. Nowadays, with the continuous development and progress of computer technology, computer technology is more and more deeply involved in various social production environments. The development of network technology and its high stability make data sharing more convenient and fast, which makes people's data sharing and public opinion information sharing lift the geographical and time restrictions, greatly facilitating people to use the network to share data and public opinion information, and the sharing of data and public opinion information can be transparent to users. With the gradual improvement of social informatization, major governments have improved their efficiency with the help of system development. Whether it is statistical system, recording system or landing system, it has achieved good response in various fields. The government has obviously improved its efficiency in management,

accelerated its progress, carried out its work well, improved its comprehensive level, and greatly improved its professional level and scientific and systematic management [1, 2].

2 Social Public Opinion

2.1 The Concept of Social Public Opinion

Public opinion refers to the opinion and opinion of the public with the power and interest to do some analysis in real life and solve hot issues through social and other electronic networks. With the opening of Weibo, special announcements, newsletters, and BBS forums have become the main means of communication between people and organizations, and these communications have played an important role in communication.

The network itself is virtual, hidden, random and permeable, and most users are happy to participate in discussions on various topics through this channel. Although it has played a good role, the lack of orientation and poor public consultation will not only endanger the safety of the environment, but also burden it. Inadequate performance in the development of the public environment. It should strengthen the positive direction of the evaluation of the times and the Olympic communication, and quickly turn the attention of the public opinion to the negative issues in a timely manner. It plays an important role in safeguarding security and development, controlling people’s thoughts and hearts, and is important for the advancement of national development [3].

2.2 Social Public Opinion Monitoring and Guidance Platform

The public relations strategy monitoring and guidance platform can be divided into five functions: the public relations strategy collection module, the social quality of the public opinion retention module, the relationship between public opinion and public opinion display module. View reviews and guidelines platform. Public opinion polls are a very important public opinion tool. It refers to the process of collecting web data from major websites using a search engine, creating an initial website, and then storing the collected data and information in a network database. Then, the public relations process will analyze, aggregate and separate public opinion, consider timely public opinion, and then collect data analysis and summary [4]. Finally, public practice evaluations of recycling processes, research, analysis of archived documents and information, voluntary submissions, and publication of public comments will inform users. It’s all easy work to monitor public opinion and load the platform. As shown in the Table 1:

Table 1. Intelligent Monitoring and Guidance of Social Public Opinion

Public opinion collection	Public opinion analysis	Public opinion release
	Public opinion retrieval	End-User
	Public opinion storage	Social public opinion

3 Classification of Data Mining Technology

Information refers only to the process of extracting information and knowledge from a lot of fuzzy information, and the extracted knowledge can be expressed in the form of content, rules, rules and standards. The main purpose of data mining technology is interpretation and prediction. By interpreting possible patterns in large amounts of data and making predictions based on possible patterns in the data, we can find good patterns and rules in the data.

The process of data mining can be divided into three parts: data preparation, data mining and interpretation and evaluation. In the data preparation stage, data is preprocessed, and the processed and filtered data enters the data mining stage. Through the processing of data mining technologies such as clustering and decision tree, potential information is extracted, and people's previously unknown knowledge is discovered after interpretation and evaluation [5, 6]. As shown in Table 2:

The most common applications of data analysis from data alone include classification, evaluation, categorization, association rules, attributes, transformations, transformations, web page mining, etc. They mine data from different angles. For example, the distribution type will be prepared in advance, the characteristics of the data objects will be found, and the data objects will be mapped into the corresponding categories; Analytical methods identify variables and learn about predictors and factors in a data series by creating functions that compare data objects to predicted values. Use the clustering method to classify data into similarities and differences in order to increase the similarity of information in as many groups as possible; Alternatively, use association rules that can define relationships between data items in a database. If an item of one set of data and an item of another set of data appear at the same time, it can be concluded that there is cooperation or communication between the two sets of data; Content analysis is used to extract specific content from a dataset in a database that shows all the characteristics of the database. To find the difference between the experimental result and the valid range, the difference between the experimental result and the expected value is shown by analysis of variance and variance. By collecting large amounts of information on the Internet and using the website to collect all the information on the Internet, we can find out what topics are covered on the Internet, and find out the needs of governments, companies and social organizations in the language of public information.

3.1 Application of Data Mining Technology in Public Opinion

Data mining technology refers to the technology to extract valuable information that is invisible to humans from large amounts of incomplete, fuzzy and random data. With the

Table 2. Data Mining Process

Data preprocessing	Irregular large number according to	data mining
Clustering decision tree	Interpretation evaluation	Valuable information and knowledge

rapid development of information technology and information technology, data mining technology can continue to make deeper use of network information and better public opinion. Since data, intelligence and technology are the main components of data mining technology, this technology can improve data mining and use [7].

At present, data mining technology is widely used in public opinion, and its main object is relational database. Using correlation analysis and other technologies, we can quickly and accurately find out useful or potential information in the database.

Data mining technology has the functions of correlation analysis, prediction, classification and error analysis. These functions are very helpful to the analysis of social situation. It can accurately analyze and mine network information, quickly find the current orientation of emotion, quickly interpret social focus, grasp the best opportunity to deal with events, and greatly improve the processing speed of society and emotion.

Social public opinion prediction refers to finding the changing law of social focus and other things from historical data, and accurately predicting the characteristics of future data by establishing a special model, so as to get a result with high probability of occurrence. Through the statistical analysis of historical data, we can get a more likely result, and the relevant personnel can take precautions. Accuracy is an important part of prediction, and it is generally calculated by variance. The prediction of social public opinion needs strict organization;

- (1) Analyze the forecast target.
- (2) Experts in forecasting should have the ability of design, production, management and decision-making, and have rich experience in social public opinion research and high-level theory.
- (3) Conduct strict feedback investigation.
- (4) Statistical analysis and pre-test the results of experts. Generally speaking, when using data mining technology to analyze social public opinion prediction, Delphi method is adopted, which is generally divided into three steps: first, send experts a prediction table without any restrictions, put forward their own prediction results, and relevant personnel integrate and analyze this information. Second, the experts explain the reasons for the prediction results and sum up the probability of the experts' identical opinions. Third, give the results to the experts, who will make the final prediction according to the summary results [8].

4 Social Public Opinion Monitoring Method Based on Data Mining Technology

Public opinion and big data share similar characteristics. With the increasing awareness of public information, there is a gradual convergence between public opinion research methods based on data mining technologies, including network research engine data mining-based public strategy analysis methods, text mining-based public relations strategy analysis methods, and social network-based public opinion research methods. Network ways to communicate with public opinion.

4.1 A Public Opinion Polling Method Based on Data Mining of Search Engine Network Systems

When an event affects the Internet, netizens search for relevant search terms to find relevant information. At this time, the web search engine will collect search data such as search time, IP address, and search words of netizens. By analyzing and calculating the search engine, we can find the hot spots in a certain time and region, and then generate a report on the search volume and search leaders, and learn about the network community research.

Using a search engine to conduct public opinion polls is generally divided into three stages: the first step is to prepare records, clean the engine, and collect the necessary information for public analysis; The second step, the key points, can be based on the time or region length of the key frequency statistic question. Following these steps, you can discover the research context of specific questions in a specific time or region, as well as find unknown hot topics; The third step is to create a public opinion report with a hot list for a specific time or a specific area, such as daily hot topics, weekly hot topics, or a sequential graph of changes on specific search engine keywords certain period.

At present, some search engine websites have launched some related applications to mine social public opinion through search engine logs. The “Google Trend” of Google, the “Baidu Index” of Baidu and the “Micro Index” of Sina Weibo are typical examples. In 2021, Google successfully predicted the spread of influenza in the United States in winter by analyzing 50 million keywords most frequently searched by Americans and then using the seasonal influenza transmission data released by the US Centers for Disease Control. The researchers selected monitoring words including “flu”, “fever” and “cough”. When users search for these keywords, the system thinks that they are related to the flu epidemic, and then analyzes them and obtains the search volume trend map [9]. As shown in Fig. 1:

4.2 Network Public Opinion Monitoring Method Based on Text Mining

From a social perspective, an important source of informal content is literature. Text-only technology can be used for automatic layout, orientation, repetition, and large text. The literature review covers many teaching topics and techniques, including natural language processing (NLP), data retrieval, data mining, and machine learning.

Data mining techniques attempt to extract specific words and relationships between specific words from text in order to obtain new and useful information and knowledge. This type of technology is the starting point for many text mining algorithms. After the data is extracted, a vector space model is used to represent the text or text content. In this model, each shape is represented by a vector of frequency subjects. Frequency content (TF) is a function that represents the number of specific words that appear in a document, dividing the entire document into a number of words. Another function is the inverse fact frequency (IDF), which is inversely proportional to the degree of word similarity. Since the data is represented by vectors of TF-IDF features, with this data a document represents n-dimensional (n is the number of words in the corpus) data points.

Using only the methods used, we can monitor information on the Internet, extract and classify messages of characteristics, generate statistics on the opinions and interests of subjects, and influence the topic of public opinion [10].

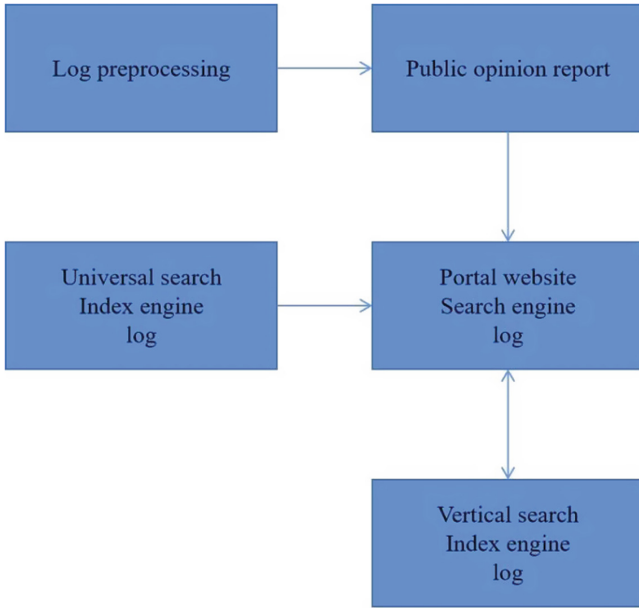


Fig. 1. Public opinion monitoring Model for Web Log Data Mining Based on Search Engine

5 Conclusion

There is still much to be done in applying data mining technology to public opinion polls. In order to create a caring relationship for public opinion in the big data environment, we need to use the flexibility of data mining technology, as well as improve the methods of data mining technology in social public policy evaluation. to improve the mechanism of implementation of public policy control over large information sheets in society. Use the development process to link big data with small data, timely update of research algorithms, integrity of social media pages of data, and fast payment of connection fees. At the same time, we need to build a common combination of Big Data simple platform and fast payment, public opinion, to improve the transparency of information and application process, to protect the privacy of users, to develop big data processing strategy of public management, and to improve reliability. And strengthen the relationship between only big data technology used by agencies to evaluate public input and public input evaluation.

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