Web Data Mining Technology and Network Information Security Precautions

Jun-zhong He*
College of Electronic Commerce, Longnan Teachers College, China, 742500

*Corresponding author e-mail: qikan904201126@163.com

Abstract. Based on Web data mining technology to discuss with the security of network information. This paper herein first briefly introduces the Web data mining technology. Then it analyzes how to construct the network information security model under the condition of Web data mining. Finally, the network security model is discussed by using Web data mining technology which may provide reference for readers.

Keywords: Web data mining technology, Network information security, Precaution

1. Introduction
With the rapid development of the Internet, it brings many conveniences to people's daily study, work and life. Network development is a double-edged sword, accompanied by its many security problems also brings many threats to people's life and work, such as easily causing personal privacy leakage, malicious theft of work confidential electronic documents[1]. When Web data mining technology is widely used in network information security, the network security situation is obtained. The obvious improvement proves that this method is effective.

2. Overview of web data mining techniques
Web data mining doesn't sound complicated. In fact, it combines traditional data mining with Web technology, but the logic and algorithms in this process are not easy. This technology can be used on the basis of network resources and it can also extract the information it needs. Thus, the value of Web technology is deeply excavated, and the utilization value and application potential of Web technology are greatly enhanced[2].

Web data mining is generally divided into three categories according to the object, and the target file is the content mining of the document content [3]. In the actual process of mining, there are two main strategies, one is directly mining the content of the document, targeting at a query language for Web mining, WebLOG. With the help of enlightenment type rules, access to their own needs for information can be obtained. Secondly, to search in other tools first and then make improvement. This approach is mainly to search engine query results for improvement processing to enhance the practical
value of the result information. The second category is Web structure mining, which is mainly conducted through the Web organization structure and link relationship for knowledge deduction, completes the classification of page structure clustering, successfully finds the authority, the central page, and finally achieves the purpose of improving the retrieval performance. In addition, in the practical application of Web structure mining, it can also mine the internal structure of documents and the hyperlink structure between documents respectively, and the typical representatives are Page Rank and Clever, etc. The third kind is the Web use mining, the mining technology mainly records information from the servers and filter information from the user's web browsing history. After comprehensive and objective analysis of collected information, technicians can easily understand user behavior patterns hidden in the data, and make corresponding forecast analysis to optimize the content and provide users with a more targeted and personalized service. The program diagram of Web mining technology is shown in Figure 1.

![Diagram of Web mining technology](image)

**Figure 1.** The program diagram of Web mining technology

3. Application of Web Data Mining Technology in Network Information Security Precaution

3.1. Construction of network information security prevention model based on web data mining

Web data mining technology plays a key role in the network information security precaution, in addition to the network information mining technology itself, it can also analyze Web access path by applying the above account of all kinds of mining method, which can help obtain more accurate characteristic attributes related to network security system [4]. Moreover, the automatic generation of security incident detection model is established based on this so as to realize the automatic accurate identification of the network security without the limitation of pattern recognition of network events based on personal experience from the past and improve the efficiency of recognition, which plays an important role in enhancing people's trust in network information security.

When we mention web data mining technology of network information security, we rely on web data mining technology to build corresponding network information security model [5]. When the web data mining technology of network information security is mentioned, it only relies on web data mining technology to establish the corresponding network information security model. The model consists of the following several modules, one of which is a filter. The function of the module from the web database is to complete the information extraction and try to "filter" the information to eliminate the inconsistent information. The second is the mining synthesizer that is mainly responsible for combining the actual mining needs, selecting targeted mining methods, and doing a good job in the execution of the mining task. Thirdly, the mining method selection expert system which plays a very important role in the whole data mining model can combine with the reality and complete the intelligent combination of different mining algorithms to ensure the effectiveness of mining. Fourthly, web data mining algorithm library has the internal storage of summary and records of historical algorithm trajectory. Fifthly, the user evaluation interface that is the interface for the interaction with
data mining technicians, through which the technicians complete the input of mining instructions. Sixthly, it is the driving module of using the data mining. Apparently, the mainly function of this functional module is to analyze statistics to mine valuable information and present the final mining results through the interface [6]. Therefore, the model of network information security protection with web data mining is established based on the above methods, as shown in figure 2.

![Diagram](image)

**Figure 2.** The model of network information security protection with web data mining

3.2. Application of network information security prevention model based on web data mining

The network information security prevention model which is based on web data mining is mainly applied to the following three scenarios: first, it is applied to network security audit. Security audit refers to the process of analyzing and auditing the security events generated by the computer operating system and related services, applications and network operations. Web data mining apply in the process of the security model, mainly through the analysis on the basis of normal network operation mode, by connecting to the network security attack rule base close corresponding analysis, analysis object for HF in a network firewall security products such as the log, found some unusual problem, find out loopholes, and in a timely manner to make up for, realize the integral network system of safety supervision, guarantee the network security.

The second is the application of intrusion detection. The traditional network intrusion detection is to define a series of feature patterns in advance according to network security experts for intrusion identification analysis. The whole analysis process is relatively rigid. And application of intrusion detection method based on Web data mining can’t totally ensure the network security. However, through the adoption of data classifying and relevance determination, data mining technology mines the information in the security audit data. It is well known that the data itself is very regular, and it can certainly use the characteristic of regularity to establish monitoring and defense rules. Security system through continuous learning, get rid of the dependence on experience, timely discovery of new intrusion, reduce the rate of error judgment, to ensure the security of network information.

The third is the application in the detection of malicious code. From the current research, the status
of malicious code development, the most widely used technology is "signature" detection. The operation of the technology is simple while the testing effect is good. However, the obvious defects in itself are that the technique can only be used for known malicious code detection and is unable to have impact on some of the latest malicious code. By applying the use of Web data mining technology, we can explore to collect the malicious code and store these codes together to form the malicious code library. On this basis, by adding some normal code, malicious code library will be divided into two parts. With the help of various algorithms, such as the common classification algorithm and Bayesian algorithm, etc., the training samples can be used to complete the identification of malicious code and normal analysis and the whole process of training is the learning process and helps to find the rule of malicious code, which can help to achieve the new malicious code detection and better protect the network security.

4. Conclusion
To sum up, web mining technology, as an upgraded version of traditional mining technology, can extract valuable information directly from various forms of network resources, so as to increasing the development and utilization of web technology to maximize the value of web technology. For example, in terms of network security protection, strongly network security protection model can be built by integrating Web data mining technology and network information security to strengthen network information security

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