

Research on Personalized Privacy Protection of Mobile Communication Users under Big Data Analysis

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Abstract: With the continuous development of mobile communication, users are increasing and the amount of information is also growing substantially. Under the analysis of big data, the issue of users' privacy has become a global concern. According to the above background, the research on personalized privacy protection of mobile communication users under big data analysis is proposed. Firstly, the mobile communication technology based on big data analysis is introduced. Secondly, the protection measures for personalized privacy of mobile communication users are described, which mainly include three aspects: strengthening the supervision of big data analysis technology, strengthening technical protection, and defining information sensitivity level for classification transmission.

Keywords: Big Data; Mobile Communication; Users; Privacy; Protection

1. Introduction

The fundamental purpose of mobile communication is to transmit information. After more than ten years of development, the number of mobile communication users around the world is already very large. This means that a large amount of information is uploaded on the mobile communication network every day or every second. With the emergence of big data analysis methods, the way of information sharing has become more and more convenient, but also due to the emergence of big data analysis, the possibility of infringement of personalized privacy of mobile communication users has increased. Therefore, the protection measures for personalized privacy of mobile communication users under big data analysis are studied [1].

2. Mobile Communication Technology Based on Big Data Analysis

Big data analysis is a popular vocabulary in recent years. As big data analysis is well known by people, its corresponding applications are widely applied in many industries. Big data analysis mainly refers to a large amount of data and materials. Under normal circumstances, the human brain cannot analyze in a certain period of time, and even general software cannot capture it. However, the big data analysis can capture, manage and analyze a large amount of data. The analysis has a new processing model, with greater decision-making and discovery, the captured information is more fast, diversely and more efficiently [2].

The most prominent features of big data analysis are diversified, massive, fast speed, and high value. Diversified refers to the richness of information sources; massive refers to the huge amount of information; fast speed refers to the fast speed of data collection and processing; high value refers to the high application value of this method. Big data analysis makes data resource-based, and its management capabilities have become the main competition means for companies.

Mobile communication technology mainly refers to the technology of information communication. As long as there is a place where there is a creature, it is inseparable from the communication of information. A long time ago, the information communication was based on letters, then on fixed-line telephones, and then on smartphones. The current way of information communication has become more and more real-time and convenient. With the continuous development of science and technology, mobile communication has become faster and more efficient, but at the same time it will bring some hidden dangers of information security.

With the continuous development of mobile communication technology, users are also increasing, and the amount of data that needs to process is also increasing sharply. Traditional data processing technology can no longer meet the needs in nowadays. Under such a circumstance, big data analysis technology has been produced. This shows that an inevitable trend of mobile communication development is based on the big data analysis technology.

Collecting, organizing, processing, and analyzing large amounts of information data is already the most impor-

tant task in mobile communications. Mobile communication technology under big data analysis is very mandatory performance and permeability. Mandatory performance shows that its approach is critical to the company's decision-making and affects users' behavior. Permeability shows that it is very easy to apply big data analysis methods, which leads to a wide range of applications and people have strong dependence on the methods. Although the big data analysis method brings convenience to the data processing of mobile communication technology, it is a double-edged sword, which brings convenience but also brings threaten to the personalized privacy of mobile communication users. Therefore, the issue of solving the personalized privacy protection of users is urgent and worthy of study.

3. Protection Measures for Personalized Privacy of Mobile Communication Under Big Data Analysis

The protection of personalized privacy has always been a concern of people especially that with the continuous development of mobile communication technology, the protection of personalized privacy is more and more serious. Compared with other privacy protection problem, the privacy protection problem of mobile communication users is more complicated and has uncertainty. Personalized privacy and security problem for mobile communication users under big data analysis is not only because of its own reasons, but also related to social, economic, moral and many other factors. Therefore, the protection measures for personalized privacy of mobile communication users are more complicated and it must be protected from multiple angles.

Although big data analysis technology has many advantages, it has privacy protection problems in every link. Only by constantly improving the technology can it better serve mobile communication. In order to protect the personalized privacy of mobile communication users, there are mainly two aspects to improve big data analysis technology, which is shown in Figure 1 [3].

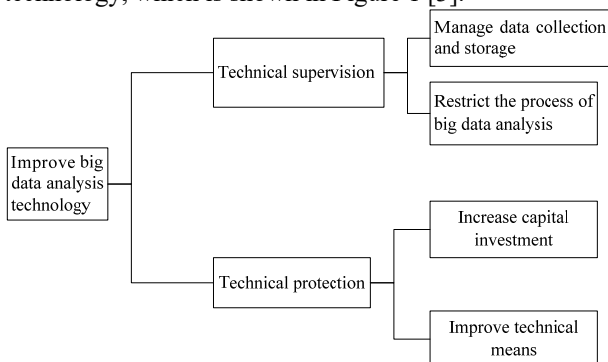


Figure 1. The improvement direction of big data analysis technology

3.1. Strengthen Supervision of Big Data Analysis Technology

Mobile communication has privacy and security issues in every link under big data analysis. Therefore, it is necessary to supervise the links of big data analysis to protect the personalized privacy of mobile communication users. It mainly supervises in the following two aspects: on the one hand, it manages the collection and storage of information data; on the other hand, it puts forward certain restrictions on the process of big data analysis.

The main measures for managing the collection and storage of information data are as follows: First, in the process of collecting information data, the main focus is on the supervision of information sources. The sources of information are mainly divided into three aspects: personal private information, personal information collected by relevant institutions, and information that individuals are willing to provide. Different supervision methods are required for different sources of information. For personal information, it can not be provided to anyone without affecting the public interest. For personal information collected by institutions, such as shopping information, medical information, etc., individuals can require the collecting party to provide relevant documents under the law. For information that the individuals are willing to provide, such as location information, social photos, etc., the protection of such information can be achieved by increasing the confidentiality agreement of the service providers.

Manage the storage of information data mainly refers to strengthen the management of the storage of personal data hardware and software facilities, to regularly overhaul it and provide security training for staff to ensure the security of personalized privacy. At the same time, it is necessary to improve the management system. It is best to distribute the responsibility into individuals and strengthen the staff's awareness of protecting users' privacy [4].

Restrictions on the process of big data analysis. Since the process of big data analysis is the most serious part of user's personalized privacy violation, the process of big data analysis should be restricted. In the process of data analysis, the two types of data are mainly analyzed, which are shown in Table 1.

Table 1. Restriction Methods of Big Data Analysis

Type	Main Content	Restriction Method
The first type	First analyzed data	The service providers cannot exceed the scope of the authorization of the principal, and the data should be deleted after the analysis.
The second type	Data discovered in the analysis	Service providers should not dig data privately and at the same time strengthen their confidential work.

3.2. Strengthen Technical Protection

In mobile communication technology, information security technology is an important link to ensure users' personalized privacy. Although big data analysis technology brings a lot of convenience to mobile communication, there are still many problems in the technology itself. Therefore, in order to protect the personalized privacy of mobile communication users, it is necessary to constantly update the technical means to provide technical support for personalized privacy protection of mobile communication users. Therefore, more advanced technologies should be developed to protect the privacy of mobile communication users. The main measures are as follows.

3.2.1. Increase Capital Investment

To develop more advanced technologies, sufficient funds are needed. The state should increase financial support for big data analysis and research. It can support it by setting up special funds, and the main purpose is to improve the technical level to protect users' personalized privacy.

3.2.2.Improve Technical Means

The personal information of mobile communication users is stored and transmitted through the network. In this process, there is a risk of leakage. Therefore, the governance and management of the network should be strengthened. First, the security systems of big data analysis technology should be constantly updated, such as firewalls, limiting systems, etc. Second, users' privacy can be protected by security measures such as access restrictions and geological locking, etc.

3.3. Define Sensitivity Level of Information for Classification and Transmission

To protect the users' personalized privacy, it is necessary to divide the users' information level, which is shown in Table 2.

After the user information is classified, different technologies are used for transmission. As it should be, the protection measures for different levels of information are

also different. The first-level sensitive information should be protected with complex encryption. For high level sensitive information, the information should be deleted after transmission, so as to protect the users' personalized privacy [5].

Table 2. Classification of user' information levels

Level	Main Content
First level sensitivity	Identity information, account information, etc.
Second level sensitivity	Company information, address information, etc.
Third level sensitivity	Custom information, hobbies, etc.

4. Conclusion

This paper firstly introduces the mobile communication technology based on big data analysis; secondly, it describes the protection measures of personalized privacy of mobile communication users, including three aspects: strengthening the supervision of big data analysis technology, strengthening technical protection, and defining information sensitive level for classification and transmission. Hope this article will be helpful for future research.

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