ISSN: 2664-9640

Neural Network Method for Big Data Analysis

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Abstract

Under the development background of the new era, big data analysis has become the main direction of China's technological development and plays a positive role in promoting the development level of the national economy. Under the background of the rapid development of new technologies such as information technology and computer network technology in China, strengthening the application and popularization of big data analysis can maximize the economic and social value of data. This paper comprehensively analyzes the relevant theories of big data analysis and neural network method, and scientifically discusses the application of neural network method in big data analysis, so as to promote the better development of neural network method.

Keywords

Big Data Analysis, Neural Network Method, Application.

1. Introduction

With the rapid development of China's economy and science and technology, big data came into being. Big data has the characteristics of large capacity, high efficiency, diversification, authenticity and low value density. It plays an important supporting role in China's economic development and scientific research. At present, big data technology is widely used in various fields in China, greatly improving the efficiency and quality of social development, so as to enhance the national comprehensive development strength. As a natural big data processing system, the operation mode of neural network has become the core content of the development of big data analysis, providing favorable support for the in-depth development of big data technology.

2. Theory Related with Big Data

2.1. Basic Concepts

In the context of the development of the Internet information age, big data has achieved unprecedented development. Big data technology is a huge data collection system. Its application scope is expanding, hiding high economic and social benefits. Specific advantages are as follows. Firstly, mass, which is the fundamental feature of big data and the premise of applying big data. Secondly, integration, scientific and reasonable analysis and integration of the collected data information is the biggest role of big data. Thirdly, universality mainly refers to that big data has a wide range of data sources, rich channels and poor data structure. Therefore, only one data classification method can’t be used to classify data information. Fourth, exponential growth, that is, the amount of data in big data will rise rapidly with output. Therefore, scientific methods should be selected for effective classification and analysis to maximize the application value of data information in industrial production.

ISSN: 2664-9640

2.2. Key Technology

2.2.1. Data platform

With the support of current data, systematic collection, scientific integration and effective storage of data information is the most important value of the data platform, which provides a favorable guarantee for in-depth analysis of data information. At the same time, in the process of data flow collection, the scope of data collection should not stay local, but should realize the comprehensiveness of data information collection as far as possible, so as to reduce the error of data information and improve the accuracy and reliability of data information analysis. In addition, the data platform can scientifically identify and classify the data information after it is collected, so as to improve the effectiveness of data information analysis.

2.2.2. Analysis platform

Analysis platform is an important part of data system, which can effectively give play to the application value of data. The analysis platform accurately calculates and analyzes the characteristics of data by using the computing model and resources in the system. For example, in distributed computing, it needs the support of servers, parameters and other related technologies. At this stage, the analysis model based on artificial experience and artificial intelligence are the two most important analysis methods in the big data platform. The former is mainly formed by accumulating experience and requires a lot of manpower and physics as support. Under the background of the development of the times, this method may cause analysis errors due to insufficient artificial experience, affecting the overall operation effect of the data system platform； The latter, whose core technology is neural network, can effectively improve the accuracy of data analysis and has high application value.

2.2.3. Display platform

After the data analysis is completed, it is necessary to display and apply the analysis results with the help of a special display platform, which can effectively promote and utilize the products after big data analysis. According to the current situation, direct knowledge and indirect knowledge are the two main data forms formed by big data analysis. Direct knowledge generally refers to the visualization of data knowledge, while indirect knowledge refers to the analysis model that can be calculated and can be used to obtain data knowledge. To sum up, the biggest role of the big data display platform is to display and transmit knowledge, transmit the data analysis results to the audience in the most scientific way, and fully reflect the main purpose of data analysis.

3. Neural Network

Neural network is a technology based on simulating brain big data analysis mechanism. Its simulation content includes the learning and development of brain neural network structure, structure model, memory mechanism and algorithm. At present, its simulation neural network model includes feedforward neural network, recovery neural network and hierarchical sequential memory neural network. These neural networks imitate the different characteristics of brain neural networks, and their practical application value has been fully affirmed. To some extent, the structure of neural network is directly related to the ability to solve problems, but to give full play to this ability, we need to rely on its corresponding learning mechanism. The learning mechanism of artificial neural network is also obtained by simulating the memory learning mechanism of human brain neural network. At the same time, it also combines the corresponding mathematical methods to derive various types of algorithms such as back-propagation algorithm.

ISSN: 2664-9640

4. Application of Neural Network Algorithm in Big Data

4.1. Speech Recognition

Speech recognition is the first breakthrough field of neural network. It is proposed combined with the concept of deep learning. Traditional speech recognition methods are based on acoustic research. At present, speech recognition is mainly aimed at the characters corresponding to the recognized language, so as to improve the error rate in speech recognition. Since 2013, with the introduction of Microsoft speech recognition function, neural network has been used to improve and extract the speech recognition system to continuously reduce the error rate of speech recognition. Even in 2013, the simultaneous interpretation product of speech recognition has been formed. The practicability of speech recognition is continuously enhanced, which has triggered great commercial value and even exceeded the function and level of human shorthand.

4.2. Medical Science

At present, big data analysis and neural network are widely used in the development of medical science. Compared with other industries, medical science has certain particularity. In its development process, we should not only pay attention to the development speed, but also pay attention to the preciseness of the development process. With the development and improvement of big data analysis technology and neural network, an American company developed a cancer monitoring system based on deep neural network in 2016. In the same year, Google also developed a program software to record and store all information in hospital information data warehouse by using big data technology, which is effectively combined with neural network, realizing the technology of automatic diagnosis according to the deep expression characteristics of patients, which has a great accuracy. At the same time, the research and development of this technology provides favorable support for the better application of big data analysis and neural network in medical development.

4.3. Computer Vision

Computer vision has always been an important research field. The traditional research is mainly based on the characteristics of images and artificial, combined with the characteristics of images, colors and edges. The analysis task of computer vision is to classify the images and clarify the cut detection of the images. The traditional image is based on artificial design. The initial design is more intuitive and abstract, and the expression ability is relatively weak. The image can be analyzed through neural network combined with big data to clarify the characteristics and methods of analysis. In the process of deep neural network research, the edge line contour in big data can be analyzed hierarchically, which is more abstract for the analysis of computer vision.

4.4. Artificial Intelligence

In the application field of big data analysis technology and neural network, the field of artificial intelligence has attracted great attention. Intelligent game is the main embodiment of the application of big data analysis technology and neural network to artificial intelligence. This statement is mainly derived from the game between AlphaGo and human go players in recent years. There are winners and losers in the game process, but the strong learning ability of artificial intelligence in this process is shocking.

5. Conclusion

In short, promoting the effective integration of big data and neural network is not only the inevitable demand of their development, but also the inevitable trend of the development of the

ISSN: 2664-9640

times. With the analysis ability of neural network, big data can build a perfect neural network system and improve the development level of big data. At present, the experimental work of the integration of big data and neural network has been carried out in many fields of society, and good application results have been achieved. Therefore, we should constantly innovate and optimize the research on big data, neural network and their integration mode, especially the research on the cognitive mechanism of human brain, give full play to the economic and social value of big data and neural network, and lay a solid foundation for the development and progress of society.

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