Application of Computer Technology in Life under the Background of Big Data

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Abstract. Since we entered the 21st century, because of the arrival of the information age, the speed of social development has become faster and faster. The unprecedented development of computer technology is also an important cornerstone of the rapid development of society. Computer technology has penetrated into all areas of our production and life. Nowadays, computer technology has become an inseparable and important tool for us. Computer technology has not only gradually changed people's way of life, but also changed people's way of thinking. It is precisely because of the continuous development of computers that many earth-shaking changes have taken place in our daily lives. It can be said that the reason for the rapid development of contemporary society is based on the computer. This article uses literature research methods and other methods to study the changes in all aspects of our lives by computers in contemporary society, and to study the changes in our lives by computer technology. Research has shown that computer technology has greatly improved our life efficiency by 67%.

Keywords: Big Data, Computer Technology, Literature Research Method, Social Development

1. Introduction

1.1. Background and Significance

With the rapid development of computer technology, computers are inseparable from people's daily production and life. People can collect and store data through computers, but in recent years, this data has grown exponentially. From the beginning of 2010 to the end of 2020, the data has increased by 50 times [1]. In recent years, global data has exploded. The term "big data" has always appeared in the public [2]. In terms of big data, people from all walks of life have not given an acceptable definition, but big data basically includes the following three basic characteristics: large-scale, diversity, and rapid production. The definition of big data in Wikipedia is to use some large and complex data sets,
which are difficult to process with existing traditional data processing tools [3]. With the explosive development of global data, the term big data is mainly used to describe large data sets. Compared with traditional data sets, big data usually includes structured and unstructured data, and both require more real-time analysis [4].

With the in-depth development of computer software, data mining technology has been quickly discovered. The classic algorithm represented by the K-media algorithm is the most commonly used clustering algorithm in practice [5]. The K-media algorithm has been widely used to obtain ideal grouping results and process massive data. Although the classic data mining algorithms represented by K-media cluster analysis have been widely used in all aspects of social life. Therefore, if the K-media clustering algorithm can be used for theoretical and empirical research on the convenience of computer technology in life, it will have special practical significance and theoretical value [6].

1.2. Related Work
Because of the importance of computer technology, more and more scholars and research teams have begun to study computer technology [7]. This is also the main reason for the rapid development of modern computer technology. And the application of computer technology to our lives has become more and more extensive. Nowadays, we and our province cannot do without computer technology. The information age is the goal of our society. Gracey has conducted in-depth research on computer research [8]. However, with the development of the times, the speed of computer development is getting faster and faster, and his conclusions are not very practical and narrow in nature [9]. Therefore, this article and the use of big data technology to conduct a detailed research on the application of computer technology to our lives. To verify whether computer technology has a positive effect on the development of our lives [10].

1.3. Main Content
In order to understand the application of computer technology in our lives in detail, this article uses literature research methods and other methods to study the influence of computer technology on our lives in the past. Then through clustering algorithm and information entropy-based outlier detection algorithm, the application of computer technology to our lives is studied in detail. Finally came to the conclusion that computer technology has greatly improved our life efficiency by 67%.

2. Application Methods of Computer Technology in Daily Life under the Background of Big Data

2.1. Outlier Detection Algorithm Based on Information Entropy
Classification data outlier detection algorithm-Greedy Algorithm (Greedy Algorithm), which is an outlier detection algorithm based on information entropy. The algorithm mainly uses information entropy characteristics, which can be used to measure the interference and the degree of interference of the data set. The lower the entropy value of the data set, the smoother the data set, and the higher the entropy value of the data set, the more chaotic the data.

The main idea of the greedy algorithm based on information entropy is that if a certain data point is separated from the overall data set, the entropy value of the data set becomes smaller, then this data point increases the degree of confusion in the data set. Therefore, the entropy value of the data set can be reduced to the maximum, and the point with the most outlier index in this data set is the data set. The operation process of the algorithm is to reduce the maximum entropy value to the minimum value, put it into an outlier set, and then continue to search until all outliers are found. The greedy algorithm must traverse the entire data set at once to find the absolute value. Therefore, when the amount of data in the data set is relatively large or the number of extreme sets in the data set is large, the time complexity of the greedy algorithm is relatively large.
The calculation formula of avf (attribute value frequency) of a data item is shown in formula (1).

\[
AVF(A) = 1/N \sum_{i=1}^{n} f(A_i)
\]  

(1)

Where \( n \) is the dimension, \( f(A_i) \) is the frequency of the \( i \)-th attribute value.

The AVF algorithm is described as follows: Input: data set \( D \), the number of outliers \( b \) output: \( y \) outliers

Suppose \( A_i \) is an attribute in the data set, \( i \) and \( j \) are two values, another \( A_j \) attribute in the data set, \( w \) is a subset of the value range, \( \neg w \) is the complement of \( w \), \( P(W | i) \) represents the attribute value. The conditional probability that the value of \( x \) belongs to the set \( w \) and is true \((\neg w | y)\). When the attribute value is \( y \), the value belongs to the conditional probability \( w \) of the set.

The distance between the two values \( x \) and \( y \) under the attribute relative to the \( A_i \) attribute can be expressed as:

\[
\ell^{ij}(i, j) = P_s(W \mid i) + P_s(\neg W \mid j)
\]

(2)

In order to limit the value of \( \ell^{ij}(x, y) \) between 0 and 1, we define \( \ell^{ij}(x, y) \) as:

\[
\ell^{ij}(i, j) = P_s(W \mid i) + P_s(\neg W \mid j) - 1
\]

(3)

Assuming that the number of attributes in the data set is \( m \), the distance between two different values \( x \) and \( y \) of any attribute in the data set can be expressed as:

\[
\ell(i, j) = 1/n \sum_{x=1,...,x \neq y} \ell^{ij}(i, j)
\]

(4)

The improved distance measurement can distinguish the difference between different features under the same feature and the above-mentioned data category assignment error problem. The data finally calculated according to the k-modes formula (4,3,1,2,3,2,1,1,2) the degree of dissimilarity with the first cluster center is 5.2203, and the degree of dissimilarity with the fourth cluster center is 4.8631. According to the calculation, the data is classified into the fourth category. After observing the experimental results, it is found that the improved k-modes algorithm in this paper is better than the traditional k-modes algorithm in the overall grouping of experimental data. This article uses this enhanced k-mode algorithm to collect data.

2.3. Research Methods of the Impact of Big Data on Physical Education

(1) Literature research method

By consulting a large number of books and documents on big data technology, we can deeply understand the social attributes and value of big data, understand the big data awareness from the perspective of social governance, and use literature analysis to sort out the relationship between big data technology and social governance on social governance Influence, seek innovation from it, propose the content to be studied and preliminary research ideas.

(2) System analysis method

Social governance and big data technology influence each other and restrict each other. Big data technology brings effective ways to social governance, and big data itself also needs governance. Consider it as an organic whole, and use system analysis to study the relationship between big data technology and social governance.

(3) Research method combining qualitative analysis and quantitative analysis

Through the qualitative analysis of social governance to understand the connotation, characteristics and essence of social governance, combined with the quantitative analysis of social governance to study the interaction between social governance and big data technology.

(4) Big data research method
By collecting, integrating and comparing data reflecting social dynamics, we have studied the application status of big data technology in Chinese social governance and the impact of big data technology on social governance.

3. Experiments on the Application of Computer Technology in Life under the Background of Big Data
This article collects and summarizes the application of computer technology in our lives through literature collection method and other methods. Use data to summarize and analyze the application of computer technology to our lives. Because of the rapid development of computer technology and the fact that computer technology has had an important impact on our lives, this article specifically analyzes and summarizes the two aspects of agriculture and Jingrong industry. In this way, we can draw conclusions about the application of computer technology to our lives.

4. Application of Computer Technology in Life under the Background of Big Data

4.1. Application Analysis of Computer Technology in Our Lives
The application of computer technology to our lives is quite extensive, whether it is our personal or social level, the situation for computer technology has been quite serious since. Table 1, Figure 1 can show how people rely on computer technology.

| age | Reliance on computers (%) |
|-----|---------------------------|
| 2014 | 76.4                      |
| 2015 | 78.8                      |
| 2016 | 81.4                      |
| 2017 | 82.6                      |
| 2018 | 85.1                      |
| 2019 | 88.2                      |
Figure 1. The degree of influence of computer technology on our lives in 2014-2019

From the above figure, we can see that our dependence on computer technology is very high, and it is in a trend of increasing year by year. Computer technology enables us to be the wheel of society. Without computer technology, we will be at the speed of development of ancient society and will greatly delay social progress. Because of the continuous advancement of computer technology. Our social development is also quite rapid. From Figure 2, we can see the degree of dependence of computer technology on the progress of our society.
4.2. Application Analysis of Computer Technology to Our Lives

Computer network technology has a wide range of uses in all areas of social life, and is an important driving force in the current social development process. While it greatly improves people's daily life, it is also constantly changing people's lifestyles. The application of computer network technology in life can be summarized in the following three aspects.

(1) Obtaining information: As a medium, computer networks have brought a lot of information to people. When people first touch a computer network, they usually start with obtaining information. Obtaining information is one of the most basic and important functions of a computer network. With the support of computer network technology, the information in the computer network is very rich, and the update speed is very fast, which meets people's urgent needs for information content and information timeliness to the greatest extent. This is an important reason why computer networks have become the most popular and most popular modern media. In fact, with the continuous development of computer network technology, the information format provided by computer networks is to add audio, video and other information content to the current video, from the initial text information to the subsequent photos and texts. With the popularization of live broadcasting and other formats, the information carriers and formats of computer networks have become more and more diverse. In the Internet age, people's daily demand for accurate, timely, intuitive and sufficient information content has been maximized. Limit satisfaction. It was once advocated "read thousands of books, travel thousands of miles". In today's Internet age, you can learn about the world without leaving your home. This is the gospel that computer network technology brings to all mankind. With the help of computer network technology, people can not only shop and work online, but also conduct distance learning, online medical treatment and video conferencing. We began to use thin network cables to connect us to the whole world, and since then, information around us is everywhere.

(2) Social entertainment: Compared with information retrieval, social entertainment is a higher-level application of computer networks. If retrieving information is considered the most basic
function of a computer network, then social entertainment will make this function more or less warm. Since then, we have been using computer networks. According to Maslow's hierarchy of needs theory, social needs are also one of the basic needs of people, based on the intermediate needs of physiological and safety needs. In the past, when face-to-face communication was impossible or inconvenient, tools such as letters and telephones were used to meet the needs of society. With the development of computer network technology, WeChat, QQ and MSN instant messaging software have become the new favorites of communication and social interaction. They are very convenient, you can directly perform voice chat, video chat, file transfer, etc. without additional payment, fully satisfying people's social needs in daily life. Human beings are increasingly inseparable from computer networks. Computer network-based entertainment activities include a variety of classic games, mainly online games, online video and audio, especially classic games that are very popular today. Online games can be relaxing, intense, exciting or amazing, and you will find another way of self-realization in the virtual online world. Some people are addicted to it and cannot even release themselves. Online entertainment based on computer network technology seems to have become a paradise for fast-paced people today. The greater the pressure and the faster the pace of life, the more urgent people's demand for online entertainment.

(3) Online transactions: Another important aspect of applying computer network technology to our lives is online transactions. Its appearance enables the computer network to be fully integrated into all aspects of economic and social life. These include "Taobao" and "Alipi" as the "four new inventions" of modern China. This shows how deeply online transactions affect modern people. Online transactions are applications based on computer network technology. Its appearance makes online shopping, online banking, online business processing and other business-related transaction activities easier, more convenient and efficient. People shop online, book tickets, order meals and take taxis. It is a trend and way of life for modern people to hand over all food, clothing, shelter and transportation to the Internet. Network transactions not only make the relationship between computer network technology and people's daily life closer, but also deepen the application of computer network technology in life.

Conclusions

Computer technology not only has many changes in our personal lives, but also plays a vital role in our social development. Compared with the traditional society in the past, the development speed of our society caused by the development of computers is leaps and bounds from the speed of the traditional society in the past. From the perspective of productivity, the productivity of modern society is different from that of traditional society. But this article also has the following shortcomings. Because of the extensiveness of the data, this article cannot effectively research and summarize all the data. It can only roughly summarize the application of computer technology in our lives through big data. As a result, the conclusion cannot be applied to all aspects, so this article should carefully summarize and strive to enrich one's knowledge level on this basis, and optimize and enrich this article.

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