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Big Data Technology in Daily Life

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Abstract: ***In today's era of information explosion, large-scale data technology has penetrated into every aspect of our lives, and the ubiquitous "figure" of big data can be seen in almost all industries. It is like a strong driving force, opening up new development directions for various industries, not only promoting industrial transformation and upgrading, but also profoundly promoting changes in people's lifestyles. From daily online shopping to urban traffic management, from medical diagnosis to personalized education, the application of big data technology has demonstrated its enormous value and potential. This article delves into the relevant knowledge of big data technology, including key aspects such as data collection, storage, processing, and analysis, revealing how big data has become an important basis for decision-making in modern society. In the field of online shopping, big data technology has achieved precise marketing and personalized recommendations by analyzing user behavior; In the field of transportation, it helps optimize route planning and alleviate congestion problems; In the field of medicine, big data helps with disease prediction and precision medicine; In the field of education, it promotes the personalization of teaching content and precise evaluation of learning outcomes. However, the application of big data technology is not without challenges. The issues of data security, privacy protection, and data quality still need to be urgently addressed. In response to these issues, this article proposes the future development direction of big data, including strengthening the construction of data security regulations, improving data processing technology, and promoting cross industry data sharing and cooperation, in order to fully tap the potential of big data and inject new vitality into the sustainable development of the social economy while ensuring personal privacy.***

Keywords: Big Data Technology; Network Shopping; Monitoring and Analysis; Information Security.

1. INTRODUCTION

With the rapid development of the Internet era, we are in an era of information explosion, and the generation and accumulation of data has reached an unprecedented scale. In this context, the development of big data technology is like the dawn of dawn, illuminating the fog of massive data processing and enabling the effective processing and storage of data that was once forced to be idle due to chaos and disorder. The innovation of this technology not only marks a leap in information processing capabilities, but also has a profound and indelible impact on the entire society's production and lifestyle. The core of big data technology lies in its powerful data processing capabilities, which can quickly extract valuable information from massive and diverse types of data. This ability turns seemingly disorganized data into an important resource that can guide decision-making, optimize processes, and improve efficiency after careful processing. The application of big data technology is like a key, opening the door to smart living and making people's lives more convenient and efficient.

In daily life, the application of big data technology is ubiquitous, greatly facilitating people's lives. Taking online shopping as an example, big data technology can accurately push products that users may be interested in and achieve personalized recommendations by analyzing their browsing history, purchase history, search keywords, and other information. This customized service based on user behavior not only improves the shopping experience for users, but also promotes sales growth on e-commerce platforms. In addition, big data technology also plays an important role in the field of transportation. By analyzing traffic flow, road condition information, passenger demand and other data, big data technology can optimize public transportation routes, provide real-time road condition queries, and even predict future traffic conditions, thereby helping people plan travel routes more efficiently, reduce congestion and waiting time[1]. In addition to facilitating daily life, big data technology also plays an important role in promoting the systematization and rationalization of people's behavior. In enterprise management, big data technology can help companies achieve refined management and improve operational efficiency[2]. By collecting and analyzing data from various links such as production, sales, and finance, enterprises can promptly identify potential problems and risks and make more scientific and reasonable decisions. Meanwhile, big data technology can also promote collaborative cooperation within enterprises, break down information silos, and achieve optimized resource allocation. In the field of education, the application of big data technology has also brought profound changes. By analyzing students' learning data, exam scores, classroom performance, and other information, big data technology can provide personalized learning plans for students, helping them better grasp knowledge and improve grades. At the same time, big data technology can also help teachers more accurately understand students' learning situations, develop more targeted teaching plans, and thus improve teaching quality and efficiency. In addition, big data technology can promote the balanced distribution of

educational resources, allowing more students to enjoy high-quality educational resources. In the field of healthcare, the application of big data technology has demonstrated tremendous potential and value. By analyzing patients' medical records, examination results, medication records, and other information, big data technology can help doctors diagnose diseases more accurately and develop treatment plans[3]. At the same time, big data technology can also predict and warn of diseases, helping people take preventive measures in advance and reduce the incidence and mortality of diseases. In addition, big data technology can promote the rational allocation and utilization of medical resources, improve the efficiency and quality of medical services. However, the application of big data technology is not always smooth sailing. With the continuous accumulation of data and the increasing demand for processing, issues such as data security and privacy protection are becoming increasingly prominent. How to ensure the security and privacy of data, prevent data leakage and abuse, has become an important challenge that must be faced in the development process of big data technology[4]. To address these issues, we need to strengthen the formulation and implementation of data security regulations, improve the technological level of data processing and storage, and enhance supervision and auditing during data usage. Despite facing challenges, the future of big data technology is still full of infinite possibilities and hope. With the continuous advancement of technology and the expansion of application scenarios, big data technology is expected to play an important role in more fields. For example, in the construction of smart cities, big data technology can help city managers more accurately grasp the operation status of the city, improve the efficiency and level of urban management. In the field of environmental protection, big data technology can timely detect environmental pollution problems by analyzing environmental monitoring data, providing scientific basis for environmental protection [5-6]. In agricultural production, big data technology can help farmers more accurately grasp the growth of crops, improve the efficiency and yield of agricultural production. In addition, with the continuous development of technologies such as artificial intelligence and the Internet of Things, the integration of big data technology with these technologies will also have a more profound impact [7]. For example, by combining artificial intelligence technology, big data technology can achieve more intelligent data processing and analysis, improving the accuracy and efficiency of data processing. By combining IoT technology, big data technology can achieve more comprehensive data collection and monitoring, providing more accurate data support for various industries [8]. In short, the development of big data technology is constantly striving to be applied in more fields with a new attitude, giving people the opportunity to obtain more useful and valuable information. This technological innovation not only changes our way of life and work, but also brings us a more convenient, efficient, and intelligent future. In the future development, we need to continue to pay attention to the progress and application of big data technology, strengthen technology research and innovation, promote the deep integration of big data technology with various industries, and contribute more to the sustainable development and progress of society.

2. OVERVIEW OF BIG DATA TECHNOLOGY

Big data technology refers to methods and tools for processing, storing, and analyzing large-scale datasets. With the development of the Internet and the acceleration of digital transformation, the amount of data generated is growing exponentially, which contains a variety of valuable information [9]. The goal of big data technology is to extract useful information from these massive amounts of data to help businesses and organizations make better decisions, discover potential business opportunities, improve products and services, and more. Big data technology provides various methods for collecting and storing large-scale data, including traditional relational database technologies, as well as emerging distributed file systems [10] and NoSQL databases [11] such as Hadoop [12], HBase [13], Cassandra [14], etc. Big data processing includes preprocessing steps such as data cleaning, transformation, and integration, as well as methods such as data mining, machine learning, and statistical analysis, used to discover patterns, trends, and correlations in data. Big data technology utilizes distributed computing frameworks such as Hadoop's MapReduce and Apache Spark to achieve parallel processing and analysis of data, in order to meet the processing needs of large-scale data [15]. Big data technology provides visualization tools and techniques that make complex data easy to understand through charts, graphics, and interactive interfaces, helping users discover patterns and insights in the data. The characteristics of big data can be summarized into three V's, namely Volume, Velocity, and Variety [16], including data from various sources and forms such as structured data, unstructured data, real-time data, etc. Big data technology can extract valuable information and knowledge from vast amounts of data, providing accurate data support for decision-makers and helping businesses and organizations make wiser decisions [17].

3. APPLICATION OF BIG DATA TECHNOLOGY

Traditional data processing techniques are no longer capable of handling the mining and processing of big data, and big data technology happens to fill this gap. Big data technology also has extremely high applications in

shopping, transportation, medicine, and education.

3.1 Shopping Aspect

With the rapid development of the Internet, the benefits of online shopping have become increasingly prominent and become an indispensable form of shopping in life. Previously, users usually had to search for something before making a purchase, and then go through multiple searches before making a purchase. Although this has brought us great convenience, due to the wide variety of items available online, constantly selecting and comparing them can also take up a lot of our time [18]. Therefore, in order to better meet the convenience of shopping for everyone, big data technology adds intelligent recommendation functions on the basis of the original, providing more accurate analysis of user preferences. For example, Xiaoli had previously collected a pair of shoes on Taobao, and when he opened the Taobao interface again, he found that the main page recommended shoes that were the same or similar to his collection; Spring has arrived, and Xiao Wang wants to buy a spring coat. Search for it in the search box. The next day when he logged in again, he found that the recommended items in 'Guess You Like' were mostly spring jackets, and he didn't need to enter a search again to directly select them... These were all 'surprises' brought by big data technology for them.

The intelligent system will scientifically and accurately analyze users' preferences based on their favorites, shopping carts, and evaluations of purchased products, and recommend preferred products to users; On the other hand, the system will automatically analyze users' preferences based on their browsing frequency, page dwell time, product browsing frequency, and appropriate processing to recommend their preferred products and provide users with a more convenient and efficient shopping experience.

3.2 Transportation Aspect

With the improvement of living standards, the use of cars has increased, making traffic congestion more serious and the frequency of traffic accidents increasing. For example, in April 2018, a four car collision occurred in Nanning, Guangxi, resulting in 10 deaths and 1 injury, and in November of the same year, multiple cars chased after each other in Lanzhou, Gansu Province, resulting in 15 deaths and 44 injuries... High frequency accidents have caused people to feel sad and anxious. Traffic data is important information that reflects the current state of a city's road conditions and is a great blueprint for building future urban transportation. Therefore, how to efficiently and accurately obtain and analyze traffic data has become the primary condition for improving traffic problems, and big data technology provides effective solutions to this problem.

Big data technology has changed the path of traditional public transportation by acquiring transportation resources, efficiently mining and integrating transportation information, and promoting balanced development of transportation [19]. And enhance the reliability of traffic safety, promote urban economic development,. In terms of services, big data technology collects data through traffic monitoring, performs statistics and calculations, and combines it with travel apps to plan reasonable and short distance transportation routes for travelers; In terms of management, information data collected through big data technology can be used to scientifically, quickly, and efficiently calculate areas with high accident frequency, and then speed limit in accident prone areas. Professional and scientific speed measurement tools can be used to effectively control the driving speed of vehicles in accident prone areas and avoid traffic accidents [20].

3.3 Medical Aspects

Diagnosing diseases and proposing solutions is the basic responsibility of a doctor. With the increasing number of people in society, the number of doctors can no longer meet the huge social demand. Every year, there are 500000 new cases of heart attack in China, and as of 2014, there were 2 million people suffering from heart attacks. On average, one person dies from a heart attack every 10 seconds. The frequent occurrence of sudden cardiac death events in recent years has caused panic, such as the sudden cardiac arrest of a 90s young man eating noodles at a roadside stall; 28 year old female IT white-collar workers died suddenly at night... Most of them had heart disease caused by excessive fatigue, but they were completely unaware of it personally. Excessive heart rate is the biggest factor in heart disease, and sudden onset of the disease may cause medical personnel to miss the best detection time, thus unable to detect the abnormal heartbeat that occurred at that time in a timely manner. The intelligent card type electrocardiograph is precisely designed to solve these problems, and it is a perfect embodiment of big data technology. It has the characteristics of being small and exquisite, convenient to carry, easy to operate, and having high testing accuracy for users. The electrocardiograph can capture subtle abnormal heartbeats, providing

important reference data for doctors' diagnosis. It can connect with the user's guardian's mobile phone through the Internet, and synchronously transmit the monitoring data to the connection end, so that the guardian can pay attention in time.

3.4 Education Aspect

Education has always been a concern, and classroom teaching is also a concern for parents and teachers. Traditional video surveillance is used to monitor classroom teaching situations and emergencies in real time, usually manually monitored, so it cannot timely and effectively evaluate the quality of classroom teaching and students' listening status.

Big data application technology integrates graphics processing and behavior recognition technologies to capture real-time image information from monitors, save screenshots, and analyze the actions and expressions in monitoring videos in a timely, efficient, and accurate manner through data acquisition and mining. The analysis results are synchronously displayed on the monitoring screen, so that teachers can timely understand the status of students' classroom learning. Even if they cannot discover it in time, they can still view it through the analysis of the saved screenshots. The intelligent monitoring system can continuously monitor the video surveillance footage for a long time, and automatically recognize and analyze the movements, expressions, etc. of the characters in the video. When abnormal expressions and movements are analyzed, the system will take screenshots and save them for prompt viewing, which improves the efficiency of event analysis. The emergence of automatic monitoring and analysis systems has comprehensively monitored the teaching situation of teachers and the listening status of students throughout the entire process. It also provides a basis for the quality inspection and evaluation of teaching and education, and to a certain extent reduces the necessary cost of manual monitoring [21].

4. DISADVANTAGES OF APPLYING BIG DATA TECHNOLOGY

Big data technology has brought some drawbacks while providing convenience. For example, issues such as information leakage, insufficiently personalized shopping recommendations, and behavioral analysis and monitoring.

4.1 Information Security Aspect

In today's era where big data technology is widely used, information leakage has become a frequent occurrence. Therefore, how to ensure information security has become a daily concern for people. According to the latest survey report released by the China Consumers Association, 85.2% of people have experienced personal information leakage. In the face of big data technology, everyone lives like a person without privacy. Big data technology records the opinions and behavioral footprints left by internet users during their online activities as data, and analyzes individual behavioral characteristics through data acquisition. As described in the novel, to understand a person, one only needs to use a computer and relevant keywords to mine all the information related to them through big data, and learn about their various behaviors.

4.2 In Terms of Online Shopping

Simply relying on big data technology for intelligent recommendations is actually quite rigid. For example, on the eve of Valentine's Day, Xiao Ming wanted to purchase a lipstick for his crush, and after selecting it, he finally placed an order. But next time I look at Taobao, I see that the recommended items are all similar, but in fact, Xiao Ming no longer needs these at this point. As users, what they want to see are actually items that are suitable for the present and useful. Therefore, intelligent recommendations can be used as an auxiliary tool, combined with users' personal information such as gender, age, and seasonal holidays, to recommend suitable products for consumers.

4.3 Behavioral Analysis and Monitoring Aspects

Although the behavior analysis monitoring system can provide a basis for classroom quality evaluation, it is painful for students. According to the latest China Youth Development Report, about 30 million children under the age of 17 in China are suffering from various emotional disorders (such as fear, anxiety) and behavioral problems [22]. These may all be important causes of psychological disorders. Severe psychological disorders can even lead to extremely dangerous behaviors such as self harm and suicide among adolescents. 24-hour monitoring puts pressure on students, making them feel like they are constantly being monitored, their every word and action is

being analyzed, and they do not feel free. They may even think that the monitoring system has violated their privacy. In the long run, students may experience mental oppression and psychological harm. There are actually many reasons for not paying attention in class, which may be a lack of interest in the current lesson; It may also be that the teacher has already learned the content taught in this lesson through self-study; It could also be due to physical discomfort, etc. These are all things that intelligent systems cannot understand, they only know that once there is a phenomenon of inattention in class, they need to identify it.

5. CONCLUSION

Big data has become an inevitable product of the development of the Internet era and is accelerating to penetrate into all aspects of our daily life. Combining big data technology with online shopping, transportation, medicine, education, and other areas can bring convenience and improve the quality of life, but it can also bring certain drawbacks to people in certain aspects. In the current era of rapid development and application of big data, big data technology is also constantly improving and perfecting. It is believed that big data technology will be increasingly valued. In the future, the development of big data will definitely be applied more widely and accurately, and will comprehensively correlate multiple fields.

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