Application Research of Data Cloud Platform Technology in Intelligent Transportation

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Abstract: From the 1990s in the 20th century, China began to develop intelligent transportation technology. In order to accelerate the development of China's intelligent transportation, during the "Twelfth Five-Year Plan" period of the country, we clarified the goal of intelligent transportation development. The big data analysis cloud platform technology is applied to the construction of intelligent transportation, giving full play to the advantages of it and promoting the development of intelligent transportation in China. This paper mainly analyzes the relevant situation of big data cloud analysis platform and its application status in the development of intelligent transportation in China, so as to fully affirm the advantages of big data cloud analysis platform and promote the development of intelligent transportation in China.

1. The concept of big data analysis cloud platform technology and the main features of technology application

The so-called big data mainly refers to another subversive technological innovation after cloud computing and Internet of Things technology. It has huge data storage, various types of data storage, low data value density and high commercial value and huge data processing speed. Fast such a feature. In the transportation field, big data mainly refers to various types of traffic operation monitoring, service and application data. Such data is generally bulky and diverse and there are great difficulties in analyzing and sorting data[1]. Data analysis cloud technology to enhance the management of such technologies. The application of high-tech in the transportation field mainly has the following outstanding features:

1) The volume of data is huge and the storage volume is large. Nowadays, the storage technology of big data technology has been upgraded from the original terabyte technology to the PB technology. The main feature of this technology is that the storage space is larger and the big data technology is upgraded through the storage device level. It also greatly increases the volume of data that it can store itself[2].

2) A wide variety of data. The field of general application of big data technology is all the data related to different aspects of the field. If this data is integrated through traditional methods, the workload is huge and the validity of the analysis needs to be considered and through the big data. Technology can effectively integrate different data in the same field and analyze effective data.

3) The processing speed of data is fast. Big data technology collects all aspects of data and through the background operation, it can realize such high-efficiency operation in one second,

greatly improve the processing speed of data and realize the efficient operation of modern management.

2. Advantages of using big data cloud analysis platform technology in China's intelligent transportation construction

1) Effectively integrate the massive data resources involved in transportation. The cloud computing technology used in the past can mainly realize the processing and integration of decentralized systems and heterogeneous data, so that relevant traffic information in different systems can be effectively organized and processed and the big data processing technology now utilized is cloud computing. The development can mainly solve the problem of storage timeliness of the massive data after integration[3].

2) It can effectively improve the operational efficiency of traffic. Through the use of big data technology, it can effectively improve the operational efficiency of traffic, the network connectivity of the road and the efficiency of the use of facilities and constantly adjust the traffic demand according to the actual situation. China's current traffic pressure is huge and the traffic efficiency is very low.

3) It can effectively improve the safety level of traffic. Big data technology has the important characteristics of real-time and predictability. Therefore, it can effectively combine the existing roadside detectors and sensors to realize the tracking of vehicle trajectories and data integration and analyze the safety performance of vehicles. Reduce the likelihood of traffic accidents. The development trend of China's intelligent transportation equipment is shown in Figure 1.
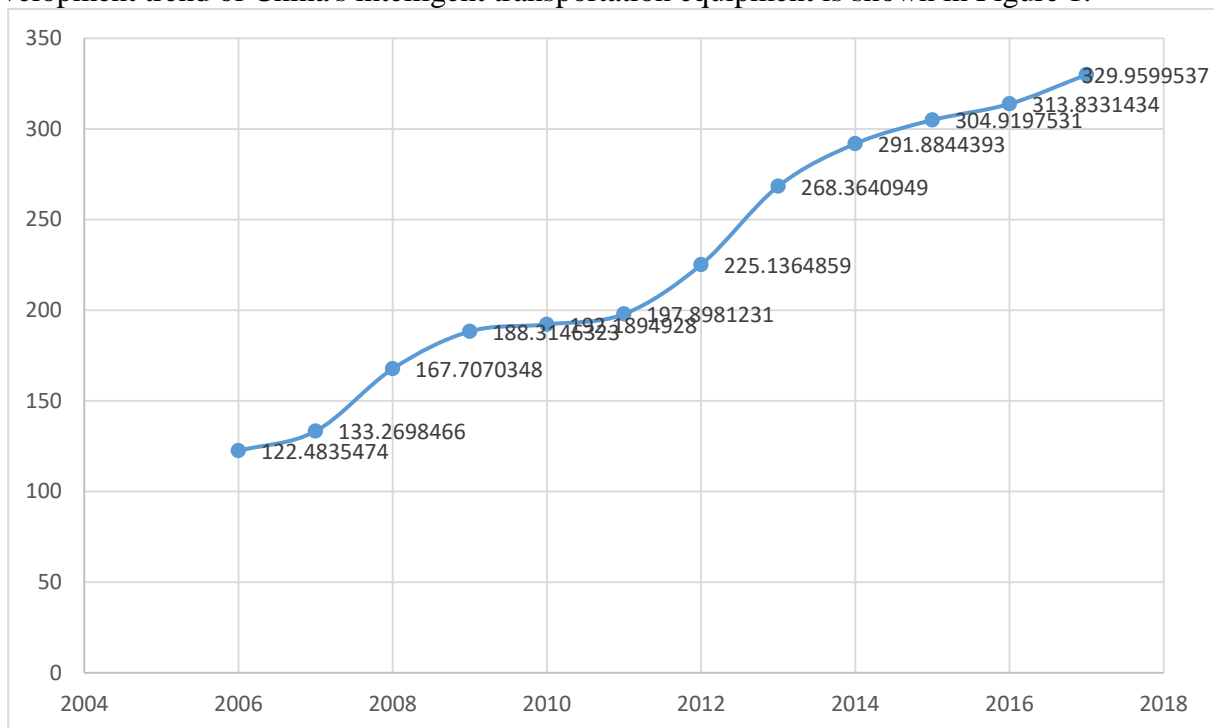

Figure 1: Development trend of China's intelligent transportation equipment

3. Improve technical support for the use of big data cloud analysis platform in intelligent transportation

The big data analysis platform used in intelligent transportation mainly includes three technical

platforms: basic service layer, data analysis layer and terminal release layer. In order to improve the technical data of intelligent traffic big data analysis platform, it is necessary to give priority to this technical level. The construction is specifically divided into:

1) Basic service layer. This is the infrastructure of the data analysis layer and the terminal's publishing layer. Its main purpose is to use the existing cloud computing technology to integrate and analyze different types of data involved and to store heterogeneous data. Ensure data security and stability. To strengthen the development of technology in this area, we must do a good job of ensuring the basics and effectively organize the facilities, objects and tools of transportation in different systems, so as to ensure the data for future analysis and feedback. The security of the data[4].

2) Data analysis layer. This level of technology mainly combines the data stored in the service level and the actual needs of traffic management, using data analysis functions and data mining techniques to process and analyze the stored information, thereby producing effective and effective decisions or judgments. Data to achieve management of traffic. The guarantee work of this level of technology is that we must constantly investigate and update the actual needs of traffic management, so that the basis of data analysis is more effective.

3) Terminal publishing layer. The terminal publishing layer mainly distributes the data analysis results transmitted back from the data analysis layer to the cloud terminal. We can provide different analysis results according to different requirements, so that the service object can be more easily used and understood and accurately found and function entry corresponding to the demand.

4. Specific application of big data cloud analysis platform in intelligent transportation

4.1. Information collection

In the development and application of intelligent transportation, the staff can also use image processing technology to collect information to ensure efficient and stable operation of the intelligent transportation system. After the development of the intelligent transportation system, the traffic department of a city uses image processing technology to collect traffic information reasonably. Through the specific operation of the technology, the staff obtains operational information of all aspects of road traffic operation, such as specific traffic flow, vehicle running speed, vehicle type and road traffic density. After collecting the relevant information, the image processing technology immediately transmits the image back to the computer of the staff and the analyst and the analyst can obtain the exact information and actual situation of the traffic operation, thereby ensuring that the traffic management department is responsible for the traffic. Carry out reasonable and efficient management and issue early warning information and guidance information in time to adjust and guide the traffic flow in road traffic operation, avoid serious traffic congestion and realize the smooth operation of the traffic. The city's transportation department found that after applying image processing technology for information collection and analysis, the work efficiency of the road traffic management department has been significantly improved and the city's traffic congestion problem has also been reasonably resolved[5]. The specific application of the big data cloud analysis platform in intelligent transportation is shown in Figure 2.
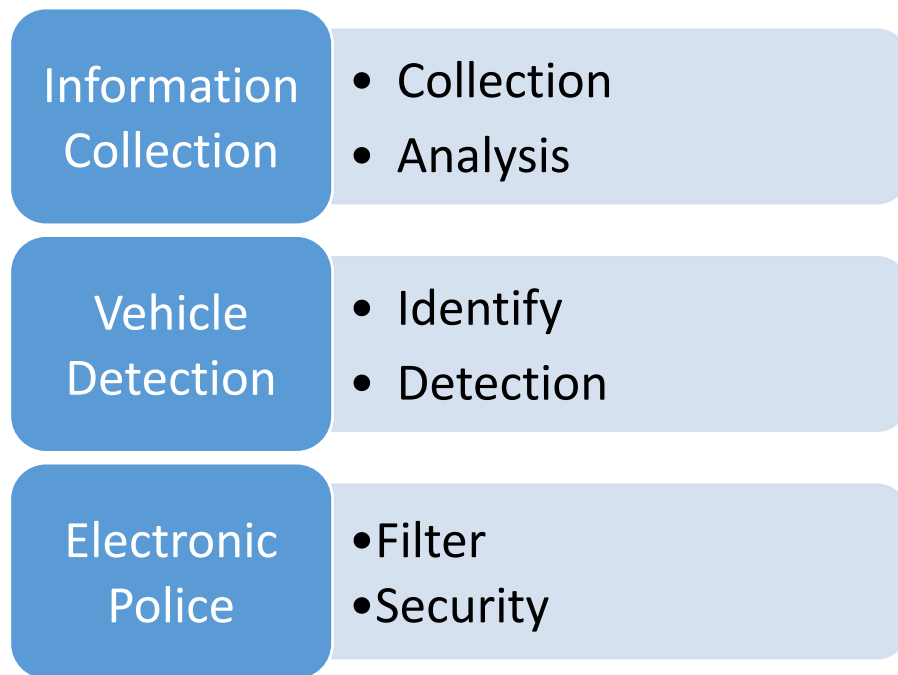
Figure 2: big data cloud analysis platform in intelligent transportation

4.2. Vehicle detection

The application of image processing technology in intelligent transportation can be used for vehicle detection in addition to license plate recognition. At present, the main methods of vehicle detection include background difference detection method, edge detection method, frame difference method and model method. These four detection methods can be used for vehicle detection and have better detection results. At present, in the application and development of intelligent transportation, a major application direction of image processing technology is to be used for vehicle detection. Intelligent traffic application image processing technology for vehicle detection is performed to some extent based on license plate recognition work. After the intelligent traffic system collects the vehicle information, the image processing technology can realize the real-time detection of the vehicle by reasonably and efficiently identifying the main information of the vehicle such as the license plate.

4.3. Electronic police

The application of image processing technology in intelligent transportation can also be embodied in the application of electronic police. The electronic police is an important part of the intelligent transportation system. It can replace the police to work to some extent, not only to ensure the efficiency of the work, but also to improve the rationality of the work. The application of image processing technology in electronic police can be divided into the following aspects: image filtering technology, image coding, image recognition, image encryption and so on. The image filtering technology mainly refers to the image processing technology that can reasonably remove the serious interference sources such as noise in the captured video image and on this basis, the effective information in the video image is extracted from the university. Video coding mainly uses the corresponding coding technology to encode the video images captured by the intelligent transportation system twice, so as to ensure that the images can meet the specific communication requirements. Image encryption is mainly used to password the video image and other security

methods can be added to ensure the security of the video image.

5. Conclusion

During the "Twelfth Five-Year Plan" period of the country, we further clarified the goal of intelligent transportation development, applied the big data analysis cloud platform technology to the construction of intelligent transportation and fully utilized the advantages of the big data cloud analysis platform to promote development of intelligent transportation in China. Through the use of big data cloud analysis platform technology, China's intelligent transportation construction has achieved far-reaching development. The article analyzes the important role of big data cloud technology in China's intelligent transportation construction and greatly affirms the importance of technology. And the use of this technology has greatly improved the current traffic situation in China and provided convenience for people's travel.

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