

The Application of Big Data and Cloud Computing Technology in Smart Campus

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Abstract: With the rapid development of China's social economy, the development model of many colleges and universities is becoming more and more information-oriented. High technology has a very important impact on the development of smart campuses. The development of the smart campus has effectively improved the efficiency of students' learning, greatly improved the status of colleges and universities in society, and accelerated the development of campus modernization. This paper focuses on the application of big data and cloud computing technologies in smart campuses, making full use of the advantages of big data and cloud computing technology to promote efficient development and make colleges and universities become a real smart campus.

In the past, in the process of campus information construction, it tends to use an independent server, database and standard in every application of campus information system, which is similar to the chimney-like island structure, according to the principle of "on-demand, one by one, independent". Although these information technology systems have improved the information technology level of colleges and universities to some extent, they are not perfect, especially in the logic and functional zoning of information technology systems, and the means of data processing are not perfect. Therefore, we need to improve the application level of big data and cloud computing technology, and build smart campuses through these two technologies.

1. Big data technology

Big Data is characterized by "big", so it can also be called massive data. The volume of big data is generally higher than that of PB. It is difficult for traditional data processing software to store and process these data. Even if it is to be completed, it takes a long time for data integration, data extraction and data analysis, and the work efficiency is very low. Therefore, the processing of big data requires a new processing mode. To optimize the way of data processing can process and analyze diverse information data and effectively improve the efficiency of data processing.

In recent years, Internet technology is in the stage of rapid development, and various mobile devices have emerged. The sensors and FRIDs in mobile devices generate a large amount of data during the operation. And the number of these data has been growing, and the speed is very fast, which means that the system has to deal with a lot of data, and shows that the validity and timeliness of data processing need to be further improved to meet the requirements of data processing. Big data technology is also generated in such a social context [1].

2. Cloud computing technology

In the 1980s, the CS-mode mainframe was the main computing model of the time, but with the continuous development of modern science and technology, the cloud computing model has also undergone great changes. The so-called cloud is a metaphor for the network and the Internet. Cloud computing is an increase, use and interaction mode of Internet-based related services. It usually involves the provision of dynamically scalable and virtualized resources through the Internet. The National Institute of Standards and Technology (NIST) defines cloud computing as a pay-as-you-go model that provides usable, convenient, on-demand network access to a configurable pool of computing resources, including network, server, storage, application software, services. These

resources can be quickly provided with little administrative effort or little interaction with service providers. Cloud computing technology is a product of many traditional computing technologies with a super computing mode based on Internet services. This technology exists in PC, mobile intelligent interrupt and various servers, which centralizes and stores large amounts of data and resources, and then provides flexible, self-service for external users. The core of cloud computing technology is the virtualization technology. By virtualizing the physical server, the resource construction is optimized in the virtual space, so that users can send information and share resources in the cloud as long as they connect to the Internet [2].

3. The application of big data and cloud computing technology in smart campus

In the construction of smart campus platform, big data and cloud computing technology are also in the process of constant change. With the development of the times and the progress of society, information technology is more and more popular. In the campus, when teachers and students use the smart campus application platform, they will find that the smart campus can meet many of their own needs, and the big data and cloud computing technology is the most important technical force in the construction of smart campus platform, which provides strong technical support and technical guarantee for the construction of smart campus, and is conducive to the healthy and sustainable development of smart campus platform in schools. The wide coverage of big data and cloud computing technology improves the use of smart campus platform, which is in line with the requirements of smart campus development [3]. Intelligent campus application platform can provide school teachers and students with such services as life, learning, teaching, and entertainment. But now many intelligent campus platform services are still relatively limited, and they are more one-sided, and lack of strong support of Internet technology. In the past, the campus entertainment life, learning life and teachers' teaching have not been systematically integrated into the construction of intelligent campus platform, which can not meet the development requirements of modern society. Now, when designing the intelligent campus platform, all aspects should be taken into account, including the social background, the development of the school, and the strength of resources. We should look at the development of the campus from the perspective of development, and realize that the campus has undergone tremendous changes in the process of social development [4].

Today, with the rapid development of science and technology, computer Internet technology has also made great progress. We need to pay more attention to modern high-end science and technology, and at the same time, we should increase the application of science and technology. Knowledge changes destiny, science and technology achieves the future, and the development of science and technology can bring great changes to the development of our society. The development and changes of the times are closely related to the development of science and technology. The campus is the main place for cultivating students, and knowledge is an important force in the development of science and technology. Therefore, high and new technology should be applied to the construction of intelligent campus platform to promote teachers' teaching and students' learning, and these two learning promote each other [5].

In the era of rapid development of information technology, big data and cloud computing technologies are facing great changes and challenges in the development process. In order to improve the campus environment and campus services, many schools use big data and cloud computing technologies to build smart campus platform. In the process of building a smart campus platform, it is necessary to strengthen the combination of technology and application and improve the use value of technology. When the school develops a plan for the construction of a smart campus platform, it needs to consider both hardware and software. In terms of hardware, schools need to increase investment in building smart campus platform, update smart campus platform, introduce some necessary materials and hardware, update equipment, and optimize smart campus platform with big data and cloud computing technology. In software, schools should understand the actual needs of teachers and students, and use big data and cloud computing technology to build smart campus platform to realize resource sharing, and provide convenience for teachers and

students' lives [6]. In fact, each teacher and student has different learning styles and lifestyles. The relevant departments of building smart campus cannot take it for granted from their own point of view what kind of platform teachers and students need. Instead, they should seek the opinions and suggestions of teachers and students according to the problems that teachers and students encounter or may encounter in the actual use of smart campus platform. Then we will carry out targeted work, using big data and cloud computing technology to provide convenience for school teachers and students, and improve the level of school informatization.

4. Conclusion

The construction of the Internet is the foundation for the establishment of a smart campus. The establishment of a smart campus platform can greatly facilitate the life and learning of school teachers and students. Big data and cloud computing technology are the main force of the smart campus platform, and the platform has a wealth of content, including teacher teaching and research, teaching courseware, learning resources, and life platform. And these contents are integrated into information. General information technology can also promote the development of information technology in the campus, but big data and cloud computing technology have a strong driving role, it can achieve greater sharing of campus information and materials, and effectively promote the construction of smart campus.

References

- [1] Li Dongmei, Luo Yu. Research on Role of Big Data in Smart Campus [J]. *Wireless Interconnect Technology*, 2017(16): 100-101.
- [2] Ma Chunxia. Application of Big Data in the Construction of Smart Campus [J]. *Science and Technology Economics Guide*, 2018, v.26; No. 637 (11):20.
- [3] Zhang Lei. Discussion on Application of Smart Campus Construction in University in Environment of Big Data [J]. *Intelligent Architecture and Smart City*, 2017(9): 42-43.
- [4] Zeng Jiaoyan. Research and Application of Data Mining Technology Based on Big Data in Smart Campus System [J]. *Journal of Guiyang University (Natural Science)*, 2018, v.13; No. 50(02):18-20.
- [5] Wang Hongmei. Application of Big Data and Cloud Computing Technology in Smart Campus [J]. *Wireless Internet*, 2017(22).
- [6] Gong Xia, Liu Ping. On Application of Big Data and Cloud Computing Technology in Smart Campus [J]. *Information and Computer*, 2019(1): 60-61.