

# Research on the Construction of efficient and Intelligent Campus based on the Internet of things

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**Abstract:** at present, the 21st century is in an important period of information development, in the process of development in recent years, the development of various information technology has also driven the construction and development of the campus in our country to a great extent. The Internet of things is an important part of the current information technology. It plays an important role in the campus construction of colleges and universities. The inspiration for the concept of a smart campus originated from the smart city. Driven by new technologies such as the Internet of things, colleges and universities in China have achieved information construction, but to better achieve intelligent campus construction, we need to have a more full understanding and analysis of the Internet of things. Based on this, the author will analyze the application of the Internet of things in the construction of the intelligent campus in colleges and universities in detail in this paper.

## 1. Introduction

With the all-round development of information technology and digital technology in our country, the cost investment and talent investment of colleges and universities under the background of information construction are also gradually increasing. How to apply information means to improve the teaching level and management of colleges and universities to ensure the intelligent development of all kinds of work and the well-realized optimization of campus resources and information sharing are the main problems in the development of education in our country. The application of the Internet of things technology in the process of intelligent campus management in colleges and universities can not only realize the relationship between people and things, things and things in colleges and universities to a large extent but also realize the management and sharing of various types of resources. To some extent, the construction of the intelligent campus in colleges and universities will not only provide a good learning environment for college students but also play a significant role in promoting the development of education in our country.

## 2. The meaning of the Internet of things

The so-called Internet of things refers to the Internet used in the process of connecting things, and the most important thing in this process is the modern Internet [1]. The users included in the Internet of things cover a wider range of users, including anything and things. In the current academic circles, the Internet of things is defined as information sensing devices and corresponding network facilities. Achieve the transmission and disposal of the information under the relevant requirements and standards, to connect more goods and the Internet in this context, and form a more powerful network system. The Internet can automatically identify and share items, thus making the identification and control work easier. It can be said that the emergence of the current Internet of things meets the requirements of communication to a large extent, which makes it more possible for the virtual to develop into reality.

### **3. The framework and characteristics of the Internet of things**

The Internet of things is usually divided into three aspects: perception layer, network layer, and the operation layer. In this link, the perception layer is mainly to collect and master all kinds of data resources in the physical world and transfer them to the network layer through an effective arrangement in this way. On the other hand, the network layer needs to transmit the information accurately, safely and timely based on the above conditions [2]. The application layer is mainly responsible for the application and management of information, to achieve the basic intelligent requirements of the Internet of things. The Internet of things has very obvious characteristics, such as sharing and connectivity, so in the process of its application, it can not only achieve the effective connection of individuals in any place but also realize the timely communication of things, to effectively connect all kinds of objects intelligently. In a word, the effective application of the Internet of things can ensure that people can provide better help for their lives with the help of the resources they currently have.

### **4. The key technology of intelligent campus construction under the technology of Internet of things**

#### **4.1 The blending of multi-terminal network**

Relying on the intelligent campus of the Internet of things, the core lies in the exchange and circulation of information, and better achieve the transmission of information communication. However, there is a lack of unified standards for network communication in the construction of colleges and universities, so it is difficult to realize that the equipment is compatible with heterogeneous networks. at the same time, there are some differences in the application of spectrum resources due to the heterogeneity of heterogeneous wireless bands. networks are different because of the heterogeneity of information networks. Therefore, the compatibility of heterogeneous networks and the effective integration of networks has become a key part of a variety of network construction.

#### **4.2 Sensor Network Technology**

The construction of sensors on the M2M platform requires relatively high requirements in the construction of the intelligent campus, which needs to integrate computer, wireless communication, data, and sensing technology to achieve integrated operation. the most critical link is the sensor node communication and storage function. While M2M is Machine-to-Machine/Man communication, when creating the platform, we should pay attention to the security and comprehensive stability of the embedded wireless communication plate in the process of communication transmission.

#### **4.3 Analysis and processing of massive information data**

The amount of terminal data in the construction of the intelligent campus is expanding day by day, and the content of the database has been further enriched with the increase of massive data, while the traditional information processing can no longer meet the needs of the current rapid development of information processing. Therefore, in the construction of the intelligent campus, it is necessary to pay attention to the comprehensiveness and efficiency of data processing, and accurately reflect the laws and valuable information presented in the data. And can better achieve semantic understanding, description and association operations and so on. Through the Internet of things technology, we can better achieve the rapid processing and identification of information.

## **5. Application of Internet of things technology in the construction of university command campus**

### **5.1 Campus all-in-one Card Management**

At present, in the construction of many colleges and universities in our country, teachers and students are specially equipped with a campus card, which is more comprehensive in function, basically covers all aspects of the life and study of teachers and students, and provides great convenience for the majority of teachers and students. The application of campus all-in-one card is also a key link in the construction of the intelligent campus in colleges and universities in our country. It can be said that the campus has realized many needs of students' daily diet, financial aid or daily payment, and some campus all-in-one cards can still be used outside the campus, using them as bank savings cards [3]. Besides, the campus card can facilitate the management of students, for example, many campuses have begun to set up a lot of access control systems on campus, students need to use one card for identity identification, and only after the identification is completed can they pass through the corresponding areas. with the development of this work, the management of colleges and universities is gradually developing towards the direction of intelligence and high efficiency.

### **5.2 Management of teaching work**

The teaching management of colleges and universities is usually divided into two links, the first is the daily teaching management, and the second is library management. In the process of daily teaching management, perceptual technology can be organized and constructed with the help of the Internet of things technology, realize the effective connection between classroom theoretical knowledge and life practice in this way. thus, with the help of this way, we can improve the problems in traditional teaching, make the originally relatively boring problems or the classroom more vivid, and further strengthen students' interest and motivation in learning. Improve the overall teaching quality and efficiency of the classroom [4]. In the process of book management, we can also make use of the Internet of things technology to ensure a more effective connection between books and books, and between people and books, to facilitate the effective connection of teaching work.

### **5.3 Security Management**

The use of Internet of things technology for campus security protection is the main link of our current construction of an intelligent campus. At present, many colleges and universities in China have gradually established video surveillance systems in areas with concentrated human flow on campus and set up temperature sensors and smoke sensors accordingly. Under this background, we can grasp the problems and situations on campus more timely and effectively, and once there is an adverse reaction or situation on the campus, this system will also issue an alarm in time. This not only ensures the security of the current campus, but also greatly saves human and material resources, and achieves the effect of killing two birds with one stone.

### **5.4 Logistics Intelligent Management in University Logistics Management**

Mainly includes lighting, catering and broadcasting and other aspects of management, before the logistics work is mainly carried out under artificial conditions, but the use of the Internet of things can achieve intelligent logistics management [5]. In every important area of the campus or on the road that people must go through, the corresponding sensor system should be installed to realize the mastery of all kinds of lamps or broadcasting equipment in the campus under this background. Besides, the corresponding card reader can be set up in the bathroom to calculate the card according to the water flow, which can more effectively realize the saving of water resources and other energy in the campus construction.

## 6. Conclusion

To sum up, the Internet of things technology is the best application of this system in the current intelligent campus of colleges and universities. It can not only improve the speed of the development of educational informatization in our country to a great extent but also lay a very significant help for the long-term development of the campus. Through the construction of the intelligent campus in colleges and universities, it will not only provide a good learning environment for college students but also play a significant role in promoting the development of education in our country. Although there are still imperfections in the practical application of this technology, I believe that with the continuous innovation and improvement of the majority of researchers, the application of the Internet of things technology in the construction of colleges and universities will become more and more perfect.

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