The Application of Artificial Intelligence Technology in the Construction of Smart Campus

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Abstract: As a new technology of intelligent management, artificial intelligence plays an important role in building a smart campus. Smart campus is an information service platform that integrates openness, innovation, collaboration and intelligence. Its main functions are wisdom, including intelligent awareness, custom configuration, two-way interaction, arbitrary access, support for big data and open learning environment. This paper focuses on the basic principles and characteristics of artificial intelligence technology, and analyzes the specific application of artificial intelligence technology in smart campus.

1. Introduction

As one of the world's three cutting-edge technologies (space technology, energy technology and artificial intelligence technology), artificial intelligence is a branch of computer science. Its goal is to construct agents that can express certain intelligent behaviors. Artificial intelligence is a challenging science, and people who do this work must understand computer science, psychology and philosophy, machine learning, computer vision, and so on. In general, the purpose of artificial intelligence is to make the computer machine think like a human. The research of artificial intelligence is more in combination with specific fields. The main research fields are expert system, machine learning, pattern recognition, natural language understanding, automatic theorem proving, automatic programming, robotics, game, intelligent decision support system and labor. Neural Networks. It is generally application-oriented. With the birth and development of artificial intelligence, people began to use computers in the field of teaching [1]. At the same time, since the 1970s, expert systems with teaching capabilities have been developed. The achievements of artificial intelligence technology and expert systems have prompted people to introduce problem solving and knowledge representation into computer-aided instruction (CAI), which is intelligent computer-aided instruction (CAI).

In recent decades, with the maturity of artificial intelligence technology, some of its research results have been applied to the teaching field, promoting the development of education development and teaching modernization. The importance of artificial intelligence in the teaching system has also reached a consensus.

2. Analysis of the basic principles and characteristics of artificial intelligence technology

Artificial intelligence technology consists of multiple systems, and the research direction is numerous. The research system that has achieved the greatest achievement is the expert system. Because the relationship between the expert system and the library work is more closely, this paper takes the expert system as an example to introduce the basic principles and characteristics of artificial intelligence technology in detail. The so-called expert system means that in a computer program, an intelligent program is added to help people solve complex problems that can be solved only by those who have acquired high knowledge skills in a certain field [1]. In essence, the expert system is a An intelligent model of knowledge reasoning. From the function and specific function process of the expert system, the ability of the artificial intelligence technology to play its role mainly depends on the professional knowledge possessed by the intelligent model. The development of artificial intelligence technology is inseparable from knowledge. It is a knowledge-based technology that combines the best of multidisciplinary knowledge and its influence in the field of scientific research is

self-evident.

In general, artificial intelligence technology systems include components such as knowledge bases, inference engines, work memory, and human-machine interfaces. The core of this technology system is the knowledge base and the inference engine. When building the knowledge base, it is necessary to formulate key problems and reasonably select the knowledge and its representation methods so as to accurately convey the knowledge in a certain field [2]. After determining the knowledge and its representation, it is necessary to use the inference engine to design the scientific reasoning mechanism, so that the artificial intelligence technology system can carry out related work according to the needs of users and solve related complex problems. In the artificial intelligence technology system, the human-machine interface is used to deal with various consulting problems. This interface is a user window. When users use the artificial intelligence technology system, they only need to access the content they need in this window, and then they can obtain related information.

3. Smart campus

Smart Campus is a further enhancement of digital campus, which realizes the comprehensive application of cloud computing, Internet of Things, mobile internet, big data, intelligent sensing, business intelligence, knowledge management, social network and many other emerging information technologies. The physical environment, and for the teacher, student group learning, work scenarios and individual characteristics can be intelligently identified. It organically connects the physical space and digital space of the school to ensure that the educational and teaching environment and living environment are more intelligent and open, which is conducive to changing the interaction between teachers and students and school resources and environment, and promoting the application of personalized and innovative services [2].

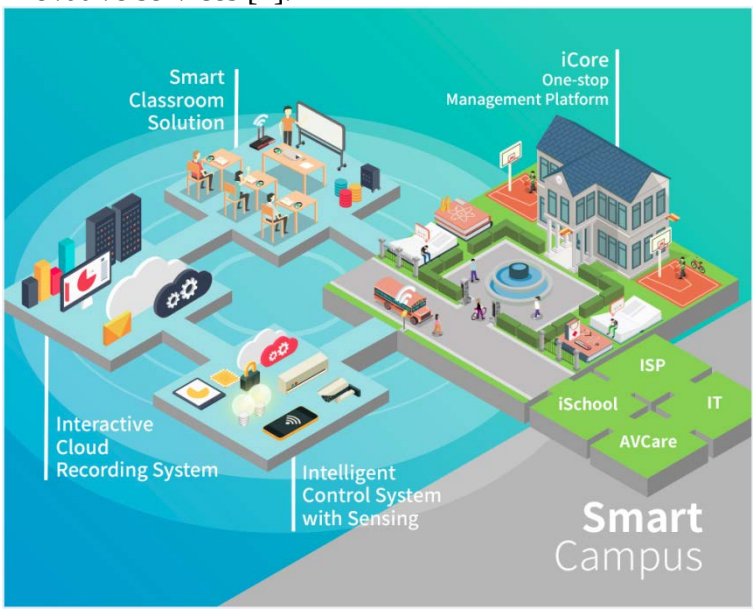

Fig.1 Smart campus

The smart campus(shown as in Figure 1) has three characteristics: First, the smart campus provides personalized customized services to provide more intelligent services for all teachers and students. The Internet is a bridge for smart campus information services, and all departments must strengthen interconnection and cooperation; Third, the smart campus can provide a new intelligent experience service for each experiencer [3]. It is a platform for the school and the outside world to communicate and integrate.

The application of smart campus needs to rely on technologies such as cloud computing and Internet of Things. Intelligent sensors are needed to connect the building, library, laboratory building, canteen and other places with the Internet to form the “Internet of Things“, and integrate educational achievements, book resources, scientific research projects, etc [3]. On the basis of content, realize the

interaction between faculty, students and internal resources of the school, complete the interconnection of systems and resources, and promote the intelligentization of campus service management mode.

4. Key technologies of smart campus

4.1 Environmental awareness and the internet of things.

At present, the main platform for delivering IoT information is still the network, but the Internet of Things adds some information awareness and processing functions to the network terminal. Perceptual technologies generally include laser scanning, infrared sensing, and video monitoring. Different from the traditional human-to-terminal network, the Internet of Things can effectively realize the positioning, integration, identification, management and monitoring functions between people, people and things, and fully realize the "smart" unique to the smart campus [4].

4.2 The organization and integration of educational resources by the cloud platform.

By organically integrating education and teaching resources with the cloud platform, it is more conducive to the integration and sharing of educational and teaching resources, so as to effectively solve the problems of uneven distribution of educational resources, slow update speed, and difficulty in sharing, and better realize education. The balanced development of resources. The main task of the digital campus in the past is to realize the initial integration and static organization of educational resources, which are often affected by the platform limitation [4]. The resource integration is more represented by physical storage, but the resource itself is less reflective of the logical correlation. .

4.3 Mobile internet and applications.

In essence, mobile internet technology mainly includes self-organizing network, 4G, Wifi and other access technologies, and mobile internet can effectively break through the limitations of wired networks that are received during network access in college campuses, fully embodying the openness of smart campuses. "feature. At the same time, the smart campus mobile internet environment under the support of wireless network has its own advantages, and its characteristics are mainly expansion, integration, high speed and scale [5]. Different from traditional networks, access terminals of mobile networks also have diverse features.

4.4 Learn about collaboration and social networking.

We usually define social networks as a socialized or social network service. It is a network service that facilitates interpersonal communication and has the characteristics of virtualization. One of the current trends in the development of information technology is social networking, which has become a key factor in promoting the development of the Internet. At the same time, social networks have the advantages of low cost and openness. They are one of the preferred ways for college students to express their individuality, maintain social entity relationships, and express their interests [5].

5. Application of artificial intelligence in the construction of smart campus

5.1 The application of cloud computing in the construction of smart campus.

The application of cloud computing platform in smart campus mainly includes three levels: infrastructure, platform and application. Among them, the infrastructure layer includes important hardware parts such as servers, storage systems and network systems, as shown in Fig. 2. The platform provides users with services such as server leases and virtual hardware resources, including data management, user authentication and authorization [6]. The development platform, middleware and database together form its platform service system. The center of the smart campus is the software service layer, where all the educational information exists. In the process of building a smart campus in the future, cloud computing will play an important role. Taking student experiments as an example, in the whole teaching process, experiments are important for improving students'

autonomous operation ability, discovering new fields, and acquiring new knowledge [6]. However, school laboratories are not open every day, and it is impossible to provide each student with the opportunity to experiment at any time. Students cannot have their own laboratory.

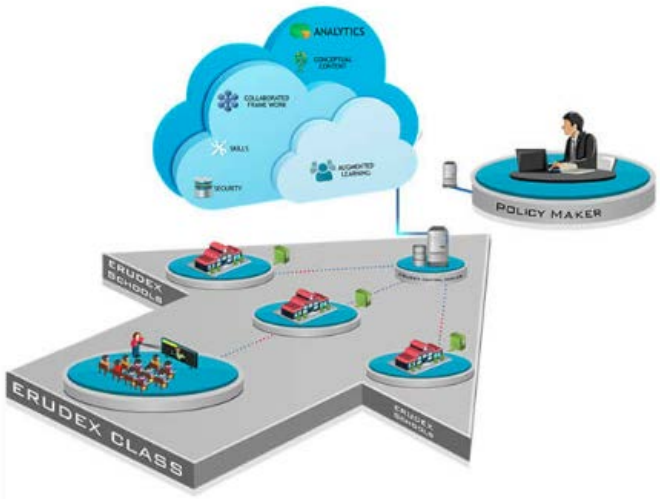

Fig.2 Cloud computing in the construction of smart campus

5.2 The application of the internet of things in the construction of smart campuses.

Intelligent sensing is the most important feature and advantage of the Internet of Things. Smart Campus can effectively manage student safety, teaching activities, teaching resources, campus life through the application of Internet of Things technology, and is conducive to creating a harmonious, intelligent, convenient, and university campus environment [7]. The application of the Internet of Things in the smart campus mainly includes three aspects, namely campus life, teaching management and security defense. Among them, when the Internet of Things plays the role of teaching management, the management content mainly includes smart library, automatic attendance management, and smart curriculum. In terms of campus life, its mechanism mainly includes smart bathroom management, intelligent dormitory management, and intelligent canteen management; In terms of security and defense, the role of the Internet of It can provide technical support for campus security and defense, make up for the shortcomings of the current security defense in the campus, and provide comprehensive control of the school situation through sensing devices [7]. When a safety problem is discovered, the device can automatically alarm, which is beneficial to the school security personnel to deal with potential safety hazards in a timely manner.

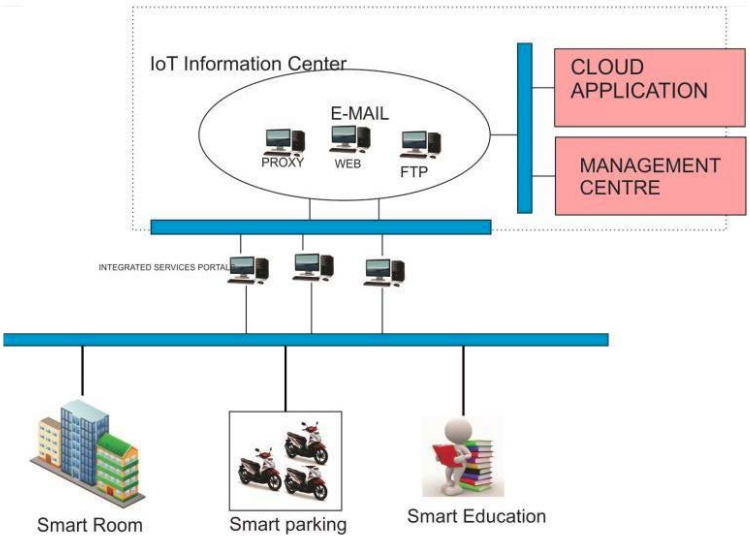

Fig.3 Internet of Things applies to smart campus

6. Summary

With the development of school information construction, smart campus has become an important part of school information construction. The application of smart campus can effectively solve the deficiencies in the construction of school information, and has been widely used in the construction of school information, office systems, educational management systems, digital libraries, security monitoring systems, card financial services, etc. The application of smart campus is an important platform for schools to improve their school-level and core competitiveness.

The application of artificial intelligence technology to serve the wisdom and education of teachers and students is conducive to the creation of a colorful campus culture on college campuses, which is convenient for the life, study and work of college teachers and students. At present, it is in the early stage of the construction of a smart campus. In the near future, the smart campus will gradually replace the digital campus and become the main direction of the development of educational information.

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