Research of the IOT Engineering Major Practice System Cater to Air Harbor

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Abstract

This paper introduced the concept of the air harbor and the IOT engineering major and the relationship between them, summarized the training objectives, major advantages and practical ability requirements of the internet of things engineering students, combined the educational practice of internet of things engineering major of Zhengzhou institute of aeronautical industry management, learnt the advanced educational idea from domestic and foreign, proposed an effective practice system reform program of IOT engineering major cater to air harbor.

Keywords

IOT engineering, air harbor, practice.

1. Introduction

The Ministry of education requires that higher education should be added to the training of new industries, support and encourage qualified institutions from the undergraduate education, and accelerate the reform and innovation of teaching content, course system, teaching methods and management system and operation mechanism, and actively cultivate strategic emerging industries related professional talents, IOT (Internet of Things) engineering undergraduate is a representative of this kind of professional.

2. Air Harbor and IOT Engineering

2.1 Concept of Air Harbor

Air harbor is a general term for the airport and related buildings and facilities located in the course of the airport, which is located on the course, which is the base of the air transportation network. From the airport flight area, passenger and freight service area and locomotive repair area of three parts. The flight zone is air harbor area is the largest regional, a command Taiwan, runways, taxiways, apron, radio navigation system and other facilities. Air harbor, the main task is to complete passenger and freight transport service, maintenance and repair of aircraft to ensure passengers, cargo and mail transported properly and the plane to a safe landing.

2.2 IOT Engineering and Air Harbor

"Twelfth five" national strategic emerging industry development plan "clearly pointed out: to focus on the sensor network, the key technology, the IP era after the deployment of related technology research and development, so that the information network industry has become an engine to promote industrial upgrading, information society". In this context, the Ministry of education in 2010 approved the establishment of the Internet of things engineering professional. So far, the country has more than 100 undergraduate colleges and universities set up the professional, and the size of the school will continue to expand. The professional training of intelligent nodes, radio frequency identification, wireless sensor network and other things related technology knowledge, with strong engineering practice ability and higher professional quality, can be in the Internet of things and related information industry in scientific research, technology development, operation and maintenance and management, and other applications of advanced technical personnel. This paper will be combined with the practice of the school of electronic communication engineering,

Zhengzhou Institute of Aeronautics Industry Management, and learn how to carry out the reform of the practical system of the Internet of things in aviation engineering.

3. Practical Ability of IOT Engineering Major

In May 2011, the Ministry of Education issued the "ordinary high school undergraduate professional directory" explicitly included in the computer science and engineering professional, currently more than 95% of the Internet of things in the computer science and technology professional development. As a result, the practical ability of the Internet of things engineering should be included in the calculation, design and analysis ability, program design and implementation, system capability, etc., and can be reflected in the Internet of things perception layer, transport layer, data processing layer, application layer and integrated network application system analysis, design and implementation.

Thinking ability - Computing: students fully understand the physical space and information space integration, and to realize the two seamless spatial connection of a IOT system has enough imagination and ability to achieve.

Design and analysis of algorithms and programming and implementation ability: students realize the perception of the massive data networking, analysis, processing, storing, mining, decision is required for intelligence, physical networking applications system development optimization design and analysis of algorithms and programming and implementation capacity.

System capabilities: to cultivate the students' realization of things networking perception subsystem, transmission subsystem, mass data storage and processing subsystem transitive network application system needed for the cognitive system, analysis, design and application, particularly important sense subsystem software / hardware analysis and design capability and application system demand analysis, overall design, system integration, system test and so on engineering practice ability.

4. Practice Teaching of IOT Engineering Major

4.1 Training Objectives and Major Advantages.

Master of science, science and technology, network and communication, control and other disciplines basic knowledge, the system to grasp the basic theory, technology and application knowledge, and have the scientific research, engineering design, application development or operation and management of the "three hit" compound talents.

The students should have the knowledge of Humanities and Social Sciences, natural sciences, professional knowledge, and tools. In the field of professional knowledge, students should have a solid knowledge of computer, network and communication, control of basic knowledge, basic knowledge of information transmission, information processing and application.

Compared with other related or similar majors, the major advantages of the Internet of things are: to develop a new subject, such as the new Internet of things, to be more comprehensive, to grasp the knowledge and technology of information awareness, information transmission, information processing and application.

4.2 Practical Teaching Requirements

The practical teaching of the Internet of things technology is one of the important links in the teaching process of the course. The design and development of practical teaching of the Internet of things are carried out in three levels: the experiment of electronic information, including circuit and electronic technology experiment, digital logic experiment, embedded system design, interface technology, and so on. The EDA integrated design, wireless sensor network design, RFID system design, environmental monitoring and control system design, business database design, communication software design and other professional practice. At the same time, in the framework of the outstanding engineers plan personnel training, design the students to the enterprise learning and practice teaching, some engineering application design of the experimental curriculum to develop the form of project research and development, the implementation of the Internet of things.

For the construction of the laboratory, the laboratory is based on the existing computer science and technology, and through the reuse of related equipment, adjust the configuration to achieve the construction of the experimental environment, complete the experimental teaching. At the same time, the design of new or existing similar laboratories to upgrade to meet the new professional and new curriculum experimental environment. According to the task of the experimental teaching environment construction in the Internet of things, a study of three years has been carried out, and the construction scheme of the RFID laboratory, the sensor network laboratory and the positioning technology laboratory has been designed.

5. IOT Engineering Major Practice System.

5.1 Clear Major Practice Teaching Objectives

From a macro perspective, the long-term goal is to enhance the students' engineering quality, training of biological networking engineering practice ability, engineering design capabilities and engineering innovation capabilities, training support industry and industry development of engineering technology knowledge and analysis tools to solve practical problems of networking engineering, engineering technology and industrial development, engineering innovation ability, and engineering innovation ability, namely in the reasonable solution of practical problems. Etc.

5.2 Diversified Scientific and Technological Innovation Practice

Discipline competition, technological innovation and scientific research activities. Extracurricular science and technology innovation practice is "learning by doing" a concrete manifestation of and contemporary college students loved the forms of teaching practice, is an important complement to the practical teaching of the course. By participating in the academic competition, students with domestic and foreign different types of colleges and universities students compete and exchange to effectively stimulate their enthusiasm to create, cultivate their creative spirit and train their creative ability, and guide them to establish the concept of innovation, improve the analysis of problems and problem solving ability. At the same time, through the discipline competition platform, but also can effectively enhance the students' team cooperation awareness, exercise their interpersonal skills.

Through the establishment of innovation, entrepreneurship training projects, project as the carrier, the problem for the pilot, to solve the problem for the purpose, so that students in the project driven active learning, active practice. At the same time, through the training program, can provide the students from the idea, design, implementation to the operation of the whole process of engineering ability training, improve students analysis, solve practical engineering problems and project management skills.

5.3 Combined with the Development Needs of Air Harbor

Zhengzhou Institute of Aeronautics Industry Management and the Ministry of aviation industry has a source of relationship, for the establishment of the aviation port of teaching practice has laid a good foundation. In the development of students' training direction, with the development of technology and the development of enterprises, especially the development of network technology in the digital era, the practice education in school enterprise cooperation has become an important guarantee to improve the professional skills and cultivate innovation ability.

In the whole teaching process in networking engineering has four compulsory internship: metalworking teaching practice, cognition practice, production practice, graduation practice, as well as other social practice activities, for a long time, each link alone, practice base in the industry professional and repeat, there is no complete system. With the introduction of enterprise system reform and market economy, the enterprise receives a practice system and positive change, our hospital by the Ministry of aviation industry college was placed under the local students to develop in the direction of diversification, along with the technical progress and enterprise development, especially the network technology development in the digital era, education practice has become improve their professional skills, cultivating innovative ability and an important guarantee for strengthening quality education.

5.4 The function of the Key Laboratory of aviation IOT

Zhengzhou Institute of Aeronautics Industry Management has successfully applied to the Key Laboratory of Zhengzhou City, the construction project of aviation, the Key Laboratory of air transport, aviation logistics system reliability engineering as the research direction, and actively carry out related technologies and theories, policies, methods and mechanisms for other enterprises in Henan province and the Chinese Aviation Industry Corp, the establishment of mutual cooperation and strategic partnership. The students of the Internet of things can be found in the students' innovative spirit and practical ability, which is based on the scientific research project. Through scientific research project, but also let the students learn the latest research trends, and to determine their own research directions as soon as possible.

6. Conclusion

Zhengzhou aviation economy comprehensive experimentation area to choose the priority strategy, but also need to use advanced technology to make Zhengzhou aviation logistics chain docking products supply chain, many links and sectors of the airport air cargo logistics collaboration, and to the Internet of things technology used in air cargo security monitoring, electronic, information, communication and other basic key technology research, so that the research results become aviation transport networking products technology innovation. Combining the practical system of the Internet of things with the construction of aviation port, it can realize the combination of theory and practice, scientific development, good effect of mutual benefit and win-win.

Acknowledgements

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