Application of Artificial Intelligence and Integrated Development of Engineering Training in Flat Garage

Hanfang Zhang1,*

1Automation Major, Department of Chemical Machinery, College of Chemical Engineering, Qinghai University, Xining, Qinghai, 810016, China

*Corresponding author e-mail: webmatserc@qhu.edu.cn

Abstract. With the continuous development of economy, private cars have become an important means of transportation for people to travel. When private cars bring convenience to people, parking Spaces in the parking lot can hardly meet people's demand for parking Spaces. In this paper, the introduction of artificial intelligence and the connotation of engineering training are explained, and the application of the overall development of artificial intelligence and engineering training in flat garage is discussed, for readers' reference.

Keywords: Artificial Intelligence, Engineering Training, Plane Garage, The Fuzzy Logic

1. Introduction

The traditional planar garage design has the defect of long time when the vehicle enters and leaves the warehouse. In the design of planar garage, through the use of artificial intelligence and engineering training to optimize the design of planar garage, optimize the route of vehicle in and out of the garage, can reduce the vehicle in and out of the garage time, improve the use efficiency of the garage.

2. Overview of artificial intelligence and connotation of engineering training

2.1. Overview of artificial intelligence

2.1.1. Definition of artificial intelligence. Artificial intelligence needs to rely on the basis of computer constantly imitate human thinking activities, behavioral ability, is a more complex comprehensive discipline. It mainly involves computer, science, language, philosophy, psychology and so on. Artificial intelligence can simulate human feeling, vision, hearing, touch, thinking and idea to achieve intelligent machine effect and solve problems in People's Daily work and life. On the
premise of ensuring safety, the efficiency of people's work, study and life can be improved (Figure 1 Artificial intelligence brings convenience to life) Error! Reference source not found..

![Image](image.png)

**Figure 1.** Artificial intelligence brings convenience to life

2.1.2. **Features of artificial intelligence.** First of all, artificial intelligence has the characteristics of real-time, high speed, transient and dynamic in the application of computer network technology. Artificial intelligence ensures the high efficiency, order, stability and security of data transmission, and plays an important role in computer network technology. Especially for the exploration of unknown problems, it has super information processing ability and the ability to accurately judge data.

Secondly, the learning ability of artificial intelligence is strong, it has the rigorous reasoning interpretation function, gradually from the low-level information to the high-level concept of orderly reasoning, network and network management control. At the same time, the application of fuzzy control algorithm in artificial intelligence is relatively fast, it can search the correct answer in the shortest time, improve the processing speed of computer network technology, ensure the accuracy of search Error! Reference source not found..

Artificial intelligence technology also has fuzzy logic, for the mathematical model of the system, it does not need to carry out a comprehensive and detailed description, it only needs to bring the fuzzy logic into the intelligent network management, to be able to effectively process fuzzy information. In this way, the unknown information to be orderly control management. At the same time, artificial intelligence can be multi-link collaborative thinking, ensure the effective collaboration between all links, improve work efficiency.

2.1.3. **The significance of artificial intelligence application in computer network technology.** Through the characteristics of artificial intelligence, we can see that artificial intelligence can strengthen the ability of computer network information processing. It can ensure the accuracy of data judgment and grasp the change of data in real time. At present, China's computer network technology is insufficient for network information processing with high difficulty. Artificial intelligence can track and control information in real time to ensure the authenticity and accuracy of information data. Then analyze the network information after processing in the shortest time to reduce resource consumption Error! Reference source not found..

2.2. **Connotation of digital engineering training**
The general trend of the development of advanced manufacturing technology can be summarized as precision, flexibility, networking, virtualization, digitalization, intelligence, cleanliness, integration and management innovation. Digital design and manufacturing technology is the foundation of advanced manufacturing technology. At present, the research on the basic theory of digital manufacturing is not systematic, far from forming a scientific theoretical system of digital manufacturing, and even the connotation and extension of the concept of digital manufacturing still need to be defined and clarified step by step. Digital design and manufacturing technology refers to the use of computer hardware and software and network environment, a technology to realize the whole process of product development, that is, through the network and computer aided product data model, a comprehensive simulation of product design, analysis, assembly, manufacturing and other processes Error! Reference source not found.. Digital design and manufacturing not only through the entire enterprise production.

Process, and involves the equipment layout of enterprises, logistics materials, production planning, cost analysis and other aspects. The application of digital design and manufacturing technology can greatly improve the enterprise product development ability, shorten product development cycle, lower development costs, achieve the best design and collaboration between enterprises, make the enterprise can in the shortest time organization global design and manufacturing resources to develop new products, greatly enhance the enterprise the competitive ability. According to the requirements of the current situation, students should skillfully use advanced digital design tools and corresponding equipment to carry out rapid development and manufacturing of products, so as to improve their practical and innovative ability.

Project contains the content of the training from the whole process of digital design and manufacture to the measurement, including industrial and artistic modelling design CAD, digital measurement, modern design analysis software platform, rapid prototyping, rapid tooling design and manufacture, reverse engineering, CNC programming and processing, injection and sheet metal forming, laser and other special processing module. Object-oriented, the training time for senior students majoring in mechanical engineering, material engineering, vehicle engineering, energy and power engineering, industrial design and other related disciplines is generally 4 to 10 days. According to the training requirements of different majors, the corresponding training content modules and training time are selected Error! Reference source not found.. The main content is divided into three parts: digital design, digital manufacturing and digital measurement. The main teaching objective of digital design training is to be proficient in Freeform M, UG NX and other software, can preliminary product (parts) design, analysis, manufacturing and product data management. The main teaching objective of digital manufacturing training is to understand the principle of rapid prototyping and digital manufacturing, and to master the 3D modeling of products, assembly simulation CNC machining technology and programming, machining simulation and CNC machining technology Error! Reference source not found.. Digital measurement training goal is to understand the main teaching ATOS optical scanning and 3 E Global coordinate measuring parts process, master of existing physical objects or models, especially the irregular surface of the object, using scanning measuring device, the measurement of 3 d scanning, reconstructing three-dimensional entity model, and then by the processing center or rapid prototyping equipment to create models or parts. At the same time, the precision of the processed parts was analyzed and evaluated (Fig. 2 Digital parts manufacturing).
3. Application of artificial intelligence and overall development of engineering training in flat garage

In order to reduce repeated calculation of routes, the routes calculated by a certain algorithm (DJKKSTRA algorithm used by the system) must be intelligently stored, and the routes can be directly queried when confronted with similar problems. This paper attempts to build a single circuit knowledge base to store the calculated single circuit. Single-machine circuit is a circuit calculated by an algorithm (Dijkstra algorithm used by the system) based on the initial layout, given the starting point and end point Error! Reference source not found.. Because any single machine line is based on a certain layout (garage vehicle distribution), it is necessary to establish a garage layout mathematical model. The model description of laying out and stand-alone lines is given below.

How to describe the garage layout (the distribution of vehicles in the garage) with a mathematical model requires consideration of several factors, including how many types of vehicles can be parked in the garage, the number of parking Spaces in the garage, and the types of vehicles supported by each parking space Error! Reference source not found..

Set of vehicle types V=(0,1,... M, n fixed vehicle parking positions 1,2, 3...... Let the set of vehicle types supported by the first position be VEV, then A certain layout A can be expressed as A= A (3a. The an. A. ∈ n. Where, a is the type of vehicle placed at position I, and Aj =0 means that there is no parking at position I.A=a1a2a3... an,a; ∈ V. B=b1b2b3... bn, b; EV, then several layout relationships can be defined as follows Error! Reference source not found.; If for any I, bj=aj, then A=B. If bj=aj, then A=B. Parent-child relationship: suppose there are two rows A and B, if for any I, there is B; = 0 or b = a; So B is A child of A, or A is A parent of B. If there are two rows A and B, and B is A sub row of A, if there is only A unique I, there is B; = 0 and b; #ai, then B is the largest sub column of A, or A is the smallest parent of B. The set of all the columns in the garage can be represented by I={a1a2a3... anta; ∈ V}, which is the complete set of the Brow. Null layout: Assume that there is A layout, if for any I, there is A; =0, A is an empty column. From the definition of sub layout, it can be concluded that an empty layout is a sub layout of any layout Error! Reference source not found..

4. Conclusion

To sum up, in the design process of plane garage, we should increase the application of artificial intelligence and engineering training to improve the efficiency of vehicle entry and exit. At the same
time, in order to optimize the best route of the vehicle into and out of the warehouse, the garage site should be fully understood.

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