Design and Research of Intelligent Mobile Robot Based on IOT Information Fusion

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Abstract. Artificial intelligence-based intelligent robots are becoming more and more popular at present, and robot navigation is an instruction issued by the neural network of the robot. Therefore, a variety of sensors need to be distributed in the neural network of the robot to issue commands for the navigation of the robot, plan the path, and perceive external information and adjust your position during the process. Therefore, the multi-sensor information fusion technology based on the Internet of Things is very important. It can provide a better information foundation for robot navigation, improve the robot navigation system and improve accuracy with the IOT information fusion technology.

1. Introduction
With the rapid development of intelligence, automation and digitalization, intelligent mobile robots have become the main technology products of contemporary society, and the penetration of intelligent products in the application market has gradually increased, which has also made more people realize that intelligent products and modern technology Relationship. Robot navigation requires the application of human intelligence on the basis of artificial intelligence, and uses human wisdom to form information fusion and information fusion for robot navigation. Therefore, in robot navigation, the IOT information fusion technology is used to provide a variety of navigation for intelligent mobile robots. Information can make robot navigation more accurate and improve the robot's intelligence and automation properties.

The sensor in the Internet of Things is a detection device, which mainly detects various types of specific information. After detecting the specific information during the sensor's action, it can convert the felt information into specific information according to the inherent law of the information. The obtained information can be output in the form of electrical signals, which can be in the form of electrical signals or the demand signals of the equipment where the sensors are located. Therefore, the information acquisition, processing, storage, transmission, display and control of the sensor can better achieve the effect of transmitting information. In a modern social environment, more and more technological means are constantly innovated, and sensors have been continuously upgraded. The current sensor applications in the IOT have gradually formed multiple attributes, both intelligent, digital, and networked, as well as miniaturized, multifunctional, and systematic, which makes sensors more widely used in intelligent automation equipment. From the perspective of the various attributes of the sensor, its combination with artificial intelligence robots in contemporary society has a direct advantage. The presence of the sensor allows information to be transmitted, and uses human intelligence to convey certain information to artificial intelligence, which makes artificial intelligence
products produce various This kind of corresponding behavior promotes artificial intelligence products to meet human needs more and more.

A single IOT sensor recognizes a single information content, and its application to artificial intelligence products can only form a single instruction, which is not enough to form an intelligent attribute. Therefore, in artificial intelligence, it is often necessary to use multiple sensors, and to achieve the collection of multiple information in multiple sensors. However, the information of multiple sensors also needs to be fused to form a neural network with self-awareness. Therefore, the multi-sensor information fusion technology in the Internet of Things achieves the fusion of a variety of information, thereby forming the intelligent attributes of artificial intelligence products[1]. The IOT information fusion technology is the use of computer technology to achieve the fusion of multiple types of information and data from different sensors. With the help of data algorithms under big data and cloud computing, a variety of information can be automatically analyzed and fused. Decisions required under current information conditions. In fact, the multi-sensor information fusion technology of the IOT is a way to combine information fusion with neural networks, which is similar to a human choice of information. When multiple types of information are obtained, decisions are made automatically based on the content of the information. The multi-sensor information fusion of the Internet of Things uses a variety of technical means such as information processing technology, computer software and hardware technology and industrialized control technology. Its application in artificial intelligence is mainly used for information identification and information positioning. The higher intelligent property can process data information image, so it is more commonly used in artificial intelligence robot navigation.

2. Application of IOT multi-sensor information fusion technology in robot navigation
The relationship between mobile robots and navigation is similar to the relationship between humans and the brain. When humans make path judgments, path choices, and actions, the brain needs to perceive the surrounding environment and form a path plan based on destination information. Therefore, the robot navigation actually needs the robot neural network to acquire, analyze and integrate the information, so as to form the path planning through the issued information instructions. By feeling the information of the surrounding environment during the movement, constantly forming new movement path decisions, adjusting its own position to reach the target position. In robot navigation, it requires a systematic neural network, which is a neural network passed from human intelligence to artificial intelligence[2], so that artificial intelligence products can produce the same judgment and decision-making effect on information as humans. In this process, it is necessary to pay attention to a problem that the information required for robot navigation is diverse, and it also needs to form and process information in a variety of information instructions. This requires the application of multi-sensor information fusion technology in the IOT to apply In the navigation of the robot, all the information of the environmental characteristics is completely reflected in the neural network of the robot by means of multi-sensor information fusion.

Why is it necessary to use multi-sensor information fusion instead of directly using multiple sensors in robot navigation? This is because some information is complementary and some information is redundant under the condition that a variety of information has not yet been fused. Therefore, when the information cannot be effectively fused, the direction of providing different information is single, which cannot form a neural network. More like several single straight lines that cross each other but cannot find the center point[3]. The sensor is equivalent to the sensory organ of a mobile robot. Only advanced sensor technology can effectively collect environmental information, thereby improving the efficiency and accuracy of navigation. Therefore, multi-sensor information fusion technology is needed. In computer technology, a variety of information can be automatically analyzed and fused to provide accurate and reliable information for robot navigation. Thus, a neural network system with intelligent attributes can be formed to respond to the outside world for the robot. The environmental characteristics promote the robot to actively plan the path, adjust the position, sense the characteristics of the surrounding environment, and avoid obstacles during the navigation process. It can be said that
the application of IOT information fusion technology to the multi-sensors required in robot navigation can improve the complementary characteristics of multi-sensor information and provide more complete information requirements for mobile robots, thereby improving the correct decision-making in the process of robot navigation. Sex.

The basic behavior of robot navigation includes perception of the external environment, identification of environmental information, path planning and tracking, adjustment of its own position, avoiding obstacles, etc. In the robot's autonomous navigation system, it needs to control the system with a neural network, resulting in corresponding behavior, Figure 1 below is a block diagram of a robot navigation system.

![Figure 1. Structure of a robot navigation system](image)

After analyzing the structure diagram of the robot navigation system, it can be recognized that in the robot navigation system, the neural network plays an important role, and the neural network is an information integration network formed by the combination of external information acquisition, which is used for robot navigation controlling. The sensor is the link between the robot's information processing and the external environment, and the robot's navigation needs to make accurate judgments on external information. Based on the artificial intelligence properties of the robot, what it perceives is the three-dimensional physical strength of the external environment, so the acquisition of three-dimensional information needs to be more perfect. The CCD camera and ultrasonic sensor are used to provide the robot with the surrounding environment information. The two-dimensional planar graphic information provided by the CCD camera can also be used to obtain the obstacle information with the ultrasonic sensor. Therefore, in robot navigation, using these two types of sensors at the same time can improve the information obtained by the robot, avoid the problem of inaccurate obstacle boundaries and azimuth information caused by a single sensor, and play a complementary role in providing information for robot navigation. More accurate and true information was obtained[4].

3. Multi-sensor information fusion technology of IOT and future development of robot navigation

The production of artificial intelligence robots has become more and more common in the current social environment. Different types of robots can be used for different types of work. However, based on the intelligent attributes required by artificial intelligence, its self-application Navigation is indispensable. What robot navigation needs is to form information decision-making ability for a variety of information in the external environment, so as to make information instructions to itself. This needs to be applied to the information fusion technology of the Internet of Things. In the fusion of multi-sensor information, a variety of external environmental information is fused, Eliminate the redundancy between information, overcome the incompleteness of a single information, make robot navigation more accurate and scientific. In the research on the multi-sensor information fusion and robot navigation of the Internet of Things, it has become a hot research topic in the field of artificial intelligence. The information fusion technology based on the Internet of Things is also an information technology. Nowadays, the application scope of multi-sensor information fusion is becoming wider and wider[5]. In the future, multi-sensor information fusion can still play an important role in robot navigation.
navigation. In addition to collecting, processing, and integrating external environmental information to provide the basis for information decision-making for robot navigation, the multi-sensor information fusion technology of the IOT can also be applied. In the automatic identification system in robot navigation, it automatically adapts to changes in the external environment and is not limited to path planning and tracking. This is actually a special attribute that makes artificial intelligence robots more inclined to human intelligence and is also conducive to providing more accurate identification for robot navigation, and the perception of the external environment can be more sensitive and scientific.

4. Conclusion
The IOT information fusion technology combines multiple technologies. As an emerging application technology, it is a technology that analyzes and combines information obtained from multiple sensors. This technology can improve artificial intelligence products when applied to artificial intelligence products. Robot navigation requires a relatively diverse information base, and it should acquire a variety of information through a variety of sensors, but in order to form a more complete neural network, it also needs complementary information. The information fusion technology of the IOT has a good practical effect on the complementation and combination of the required information in robot navigation. In the design of robot navigation, attention should be paid to the application of multi-sensor information fusion technology.

5. Acknowledgement
Guiding Project of Science and Technology Research Program of Hubei Provincial Department of Education (B2018273)

6. References
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