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EC601 A2 Project 1: Delivery Bot

Problem Statement

This paper focuses on the generation of delivery robots, their applications, and possible future directions. In the post-epidemic era more and more consumers are choosing to shop online, and most consumers want their purchases delivered as quickly as possible. A demand that has effectively stimulated the development of the logistics industry. In order to cope with the rapidly increasing demand for logistics, logistics companies need to hire more employees to sort and deliver packages, which will undoubtedly increase the huge operational costs. Under such conditions, the use of delivery robots to complete the delivery has become an excellent choice in order to reduce operating costs and improve efficiency. Although there are some security challenges in using delivery robots in the delivery process, security can be improved by installing biometric detection modules on delivery robots to verify the identity of customers.

Application

In the warehouse, delivery robots are programmed to pick out items and deliver them to the packing workroom when a user places an order. It realizes efficient and orderly operation.In the delivery chain, delivery robots are networked to deliver goods autonomously. In addition, the number of robots can be increased or the capacity of delivery robots can be increased to achieve greater delivery capacity.When consumers shop, they can select products through a computer connected to the delivery robot and have the robot pick them up and deliver them to the user's window, enabling efficient and convenient shopping.

For the society, the delivery robot has a huge role in promoting the development of the whole industry. Not only will its application not reduce the number of jobs in the delivery industry, on the contrary, he will greatly improve the working environment of the delivery industry. Workers do not have to work long hours outdoors. They only need to sit in the office to monitor the robot's operating status and provide appropriate remote operation to help them out of trouble if they encounter accidents. In addition, for indoor delivery robots, their presence can help people with disabilities to live better alone. The robots can perform some simple delivery tasks. Of course, if there are some complex individual needs , only some general accessories are needed to be designed separately to achieve the handling of complex tasks.

For me, I am very interested in the control system of robots. Especially for the control of motors. For complex and delicate tasks, even very small control deviations can lead to failure of the task. A simple example is a robot hand that grasps eggs. We need to control the drive motor with the right amount of force to prevent breaking the egg. This is challenging but I have confidence solving this.

Review

In the studying of the literature, it reveals that in order to achieve the control objectives, the motor speed control system imposes great requirements: fast, stable, and small overshoot. The most commonly used control method is PI control.

Reference

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