Homework1

Human beings have been in the pursuit of comfort on the road to overcome the obstacles, the steam engine for mankind to provide unprecedented power, and the use of electricity to drive a new era. The wave of the fourth industrial revolution will be led by artificial intelligence. With the progress of technology, existing robots can make new breakthroughs in various aspects, among which service robots have the most promising application prospects.Service robots, obviously, are most important in providing services to humans. The concept of service is broad and can involve all aspects of life. Existing service robots are basically made up of a tablet computer and a remote-controlled chassis, laser sensors and cameras (including RGBD) for mobility and obstacles, and ultrasonic waves. The intelligence level of this kind of robot is relatively low, which largely relies on the inherent control of the program. It is difficult to modify the behavior according to the changes of the external environment, so the service work that can be completed is relatively simple. One of the most representative is the sweeping robot. This kind of robot is the more popular robot in the market, is generally accepted by the public a kind of robot.The sweeping robot should have the following capabilities: 1. The ability to read maps. 2. Ability of path planning. 3. Sufficient endurance. 4. Cleaning ability. The first two capabilities already have very mature algorithms, and the last two requirements for hardware are not difficult to achieve. So the robot has been able to basically replace the human to complete the cleaning work.However, the existing service robot also has many shortcomings that hinder its service efficiency and service effect. 3. Poor self-service system: at present, the most widely used service robot in the market is the food delivery robot, which cannot realize all functions of waiters and waitresses. It does not have the independent service ability, and there are still technical barriers to the real sense of intelligence. In the application scenario of restaurant, the robot can meet the needs of regular food delivery and side dishes. However, if the customer has some unconventional needs, the robot will not be able to make, the current domestic restaurant robot intelligence is very limited, there is a certain "IQ" but not "eq". For example, at present, restaurant service robots can only carry dishes to the table, instead of arranging dishes, which can only be done by customers themselves. The robot can only follow a preset path and cannot "happily" chat with customers.On market and the vast majority of room robots need to laying the ground of tape, so there is no track room will be one of the focuses of future restaurant robot development, to solve this problem, can make dining-room robots practical problem is a big increase, so there is no track robot is mainly rely on the staff to the restaurant map to create and edit, set up a series of target points table. Each time it enters the working mode, the robot can know its current position and navigate autonomously to the target position. There are technical defects in the visual system: the hand of the food delivery robot and the customer service robot on the market is like a decoration. To make the robot manual, the robot must be able to recognize objects and know the features of objects so as to distinguish. This step requires machine vision. Although lidar can scan objects and identify features, it has limitations. At present, lidar can only scan at 60 angles, so objects can only be identified by machine vision.In my opinion, the service robotics industry should make breakthroughs in self-service systems and machine vision. The ideal service robot should be able to communicate well with humans and be able to react and move quickly in response to changes in the environment.