Description paper in
Tai Zhou Bilingual high school team for
robocup home EDU

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Abstract, This article introduces students from the A.T.I.I team through various modules in Choregrathebian to initiate dialogue, age recognition, picture learning, movement, etc., to program the pepper robot and complete a specific service scenario.

1.Introduction

A.T.I.I was selected and eliminated on campus, and finally stayed and participated in the robocup home EDU on behalf of the school.

Although it is the first time for a team in the competition to participate in a global competition, with our interest in robot programming, we are still full of confidence.   For this competition, we continued to study and modify for a month, and finally we finalized our solution on May 20.   This article introduces the robot's behavior module, language module, movement module, picture learning, and age recognition module in detail.

2.Algorithm about how to get the oldest age

In order to make the oldest person always sit on the sofa, we use an age recognition module,

In actual operation, we will first identify the age of the party host John before everyone comes and temporarily save it as Age (the age information and the person corresponding to this information are saved in age), and then every person who comes in will be treated by Pepper. Perform age identification and save it as Tage, compare Tage with age, if Tage is greater than age, delete the old age and add a new age. The content is consistent with Tage.   Doing so can make the robot always know which guest is the oldest, and arrange seats reasonably.

3. Dialog content

This part is mainly about the behavior patterns of robots.   In this scene, Pepper plays the role of the master John's butler.   Specific steps are as follows:

1. Open and close the door.   Bob asks: Who can open the door? Pepper will raise his arm to open the door to welcome Bob in.

2. Collect basic information.   Pepper will first recognize Bob's face, and then ask: What is your name? and What is your favorite drink? Then Pepper will record the information that Bob answers in the database.

3. Introduce Bob.   After John finishes saying Nice to meet you, Pepper will first respond

according to the program set in the dialog: Nice to meet you, too. Next, Pepper will introduce Bob's favorite drink to John.

4. Choose a seat.　When Bob asks "please help me find a free seat", Pepper will choose a suitable seat for him according to Bob's age.
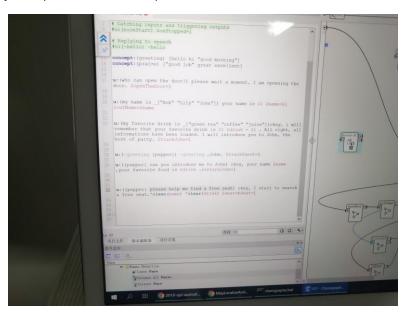
5. Greet Lily.　Repeat the above steps.

Figure 1.dialog content

4.The moving position of the robot:

1: The robot Pepper stands next to the door. The door is closed. After hearing Bob's instruction, the robot helps Bob open the door.

2: After Pepper brought Bob in, the robot stepped back half a meter and asked Bob's name and what he liked to drink.

3: Pepper moves to John to say hello

4: Pepper selects a seat for Bob according to his age and moves to the position in front of his second seat.

5: The robot Pepper returns to the position next to the door. The door is closed. After hearing Lily's instruction, Pepper helps Lily open the door.

6: After Pepper brings Bob in, the robot moves back half a meter and asks Lily's name and what he likes to drink.

The door gap is smaller than the width of robot fingers, so it is impossible for pepper to open the door like human. Considering this point, we set the situation in Figure 2 to open the door and the Figure 3 to close the door. In this way, pepper can open the door successfully and we can see the change clearly.

Figure 2. opened the door

Figure 3. closed the door

5. Face Rcognization Area

The robot used the following two functions: face recognition and face tracking. The robot recognizes the portrait's module and camera in the robot's eyebrow position to better scan the portrait.

Since there is no data of John, the party host, and his two friends in the database, we need to recognize John's face first before we start, and the information obtained is stored in the database to realize the requirement before the program runs, that is, let the robot know John. At the beginning of the program, The robot will use the camera to scan and observe the face, and then convert the face image into data and store it in the information database. After the robot can be match for your information from the database, that is to say, at the beginning of the party, the guests when Bob came robot will ask his name, programmers will input program, according to the names of the provided by Bob, and then let the robot to identify his face of face, then the robot will face into a whole string of data storage and name matching, So the robot remembers you, and that's the face learning function. Then, when the robot sees the face, it will match the face with the face information in the database. When the matching degree of Bob is relatively high, it will think that he is Bob and say his name, which is the embodiment of face recognition function.