Team description of CIT Brains @Home

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Abstract. CIT Brains @Home has been newly set up in November 2016. We have built a robot for

1 The aim of the team

CIT Brains @Home has been newly set up in November 2016 by the staff and students in Department of Advanced Robotics, Chiba Institute of Technology. The aim of this team is integration of research progresses in our department.

- Description of the hardware and software including a list of integrated
- externally available components (including commercial products, freeware, Open Source, etc.)
- Photo(s) of the robot
- Focus of research/research interests
- Applicability of the robot in the real world

2 Robot

The robot, which has no name, is mainly composed of a commercial mobile robot, two self-produced manipulators.

2.1 Hardware

Mobile robot part We use i-Cart mini[1] as a mobile robot part with some modifications. In our department, this robot is also used for Tsukuba Challenge, which is an annual competition on outdoor navigation of mobile robots held in Japan.

Though the motors are very silent, they have an ability to make the robot move on public streets. This mobile robot has two drive wheels whose diameter are 155[mm], and one rear caster whose diameter is 100[mm]. Each of the drive wheel is connected to a slient brushless motor.

Under the front bumper, an UTM-30LX-EW Scanning range finder is attached for navigation. A Microsoft Kinect at the top of the robot is used for detecting and following persons.

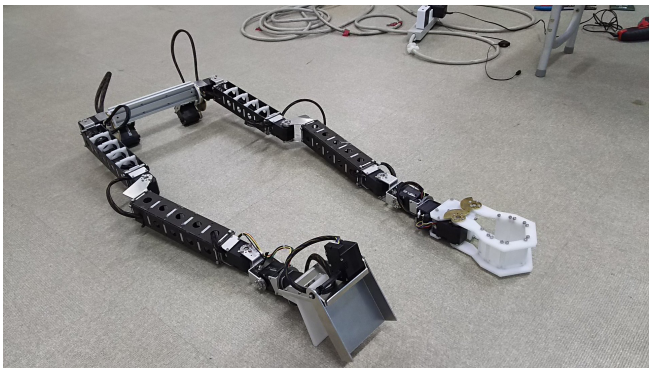

Fig. 1. Manipulators and Hands

Manipulator part The robot has two manipulators, which are called arms hereafter. Each arm has

Two kinds of hand are attached to the manipulators respectively.

Cover of the robot We have never been prepared.

2.2 Software

3 Innovative technology and scientific contribution

Our basic idea to realize home-care robots is that they should try something even if they have certain information what they should do. Some mistakes will occur when the robot acts without certain information. However, a decision making rule that permits mistakes will make a robot accomplish more tasks than another rule that waits for perfect information.

We also think that decision making with this loose policy will generate a natural communication between a robot and its owners. For example, a person want to eat cookies with a high probability when the owner asks his/her robot to bring cookies. However, there is some some possibility that the owner

4 Contribution of open source

We have developed a ROS module for servo motors made by Kondo Kagaku Co., Ltd.

References

1. T-frog project: Robot Frame i-Cart mini. http://t-frog.com/products/icart_mini/ (2013), (visited on 2016-02-09)