

## Real Size Class Skills Challenge Tasks Examples

*This document shows the Skills Challenge examples and the competition area example from 2020 rules.*

Skills challenges for 2020 include:

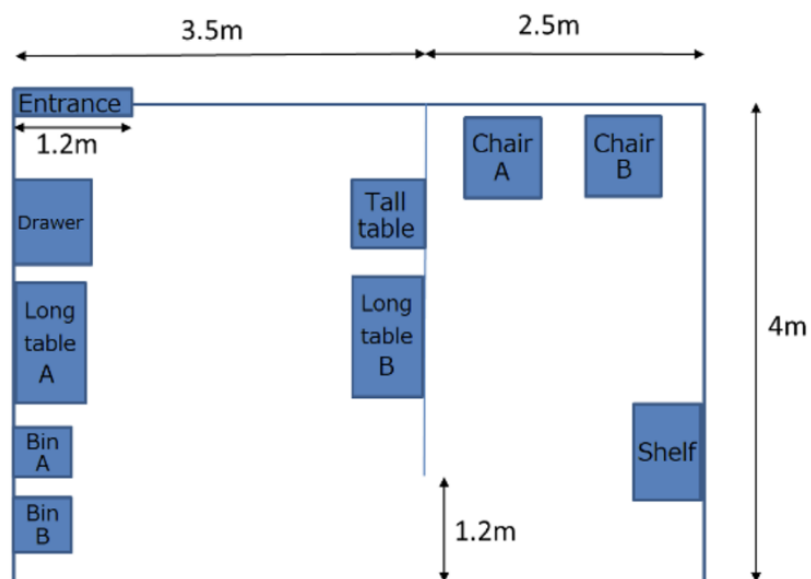
1. Robot Guide Test
2. Speech Recognition Test
3. Assisted Service Robot Test

### 1. Robot Guide Test

The Robot Guide Test aims for a robot to simulate a guide dog leading a blind or visually impaired person around obstacles. Every time it encounters an obstacle, the robot has to indicate where the obstacle is for the blind/visually impaired person in an effective and creative way so that the robot and the person can go around obstacles (without hitting). Figure shows the layout of the rooms.

One of the team members test the robot during the guide test.

- 1.1 A robot starts from the entrance point to the next room, entering through the door (door is not closed) without hitting anything (20 points). There is no obstacle in both rooms. The path is set up and announced before the test. **(create a goal point, deeper in the room)**
- 1.2 A robot starts from the entrance point to the next room, entering through the door (door is not closed) without hitting anything. (20 points) There are several obstacles (chairs) in the first room. (not hitting obstacles = 5 points) The path is set up and announced before the test.
- 1.3 A robot starts from the entrance point to the next room, entering through the door (door is not closed) without hitting anything. (20 points) There are several people walking inside of the room. (not hitting people = 10 points) The path is set up and announced before the test.



## 2. Speech Recognition Test

Speech Recognition Test aims to simulate a home assistant in helping elderly and people with disabilities at home as a communication partner. The robot needs to respond to questions that a person asks.

*Procedure:*

1. The robot starts at a designated starting position and announces (by voice or display) that it can start a conversation with a person.
2. It waits for a person to start a conversation (a person stands close to the robot, but could be behind it).
3. When a person calls, it needs to find the person.
4. Once it faces the person, the person starts asking a question.
5. It will, then, answer to the question
6. The person will ask 2 out of 5 questions (set by the team), to which it needs to respond.
7. After the questions, the person says good-bye to the robot. It needs to respond to it, then move out of the room (through an entrance).

The robot can ask the person to repeat the question 2 times if it did not understand it. But after that, it needs to move to the following question.

## 3. Assisted Service Robot Test

The Assisted Service Robots Test aims to simulate a home assistant in helping elderly and people who have disabilities. The robot is required to be able to communicate with the owner to understand the owner's needs or instructions in order to provide appropriate assistance. A list of tasks that teams can use will be announced two months (in August 2020) before the competition.

With this test, a robot is tasked to understand the order by the owner and complete the task upon request. The task to be carried out by the robot is randomly selected by the judges. The robot may repeat the understood command and ask for confirmation. If the robot cannot understand the command, it can ask the owner to repeat the command or ask for further information.

The owner is one of the judges.

*Procedure:*

- 1 The robot starts from the entrance point, and moves toward the owner (the owner's standing point will be predefined).
- 2 A command is selected randomly. The owner gives the selected command to the robot.
- 3 The robot will work on the task assigned. Before starting to work on the task, the robot must indicate that it understood the command by repeating the command.
- 4 Once it completed the task, it should go back to the entrance point.

*Tasks:*

- 3.1 Go to XXX, find  $\triangle\triangle\triangle$ , and tell  $\circ\circ\circ$
- 3.2 Go to XXX, grab  $\triangle\triangle\triangle$ , go to  $\circ\circ\circ$ , and place/give  $\triangle\triangle\triangle$  on/to  $\circ\circ\circ$