The 1st Partner Robot Games

(Game Division and Demonstration Division)

Guide for contestants and rules

1. Contest entry qualifications:

Anyone who can create a robot or a device in compliance with the rules of each division and who can participate in the contest on the days specified below. Both individual and group entries will be accepted.

2. Date

September 7, 2001 (Fri.):	Preparation and trial run of entered robots and other devices Preliminary games will be played when there are too many applications.
September 8, 2001 (Sat.):	Main games of the Game Division and the Demonstration Division

3. Place

At the Special Goods and Technology Fair 2000 in Miyagi at the Yume Messe Miyagi
3-1-7, Minato, Miyagino-ku, Sendai 983-0001

4. Application deadline

June 30, 2000 (Sat.)

5. For application or inquiries, please contact:

Tomoko Kanno
The Executive Committee of Partner Robot Games at TECHNO PLAZA Miyagi, Inc.

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Objective of the Partner Robot Games

In the near future a close friendship may be formed between man and robots. Robots are given their life (although fake) by man and support us in tasks that seem difficult or hard for us. We, in turn, will create more robots and provide them with energy. We should keep such "good partnership" with each other.

The theme of the "Partner Robot Games" is "For the welfare of the aged and physically challenged people". Foreseeing such a future society as described above, in this contest we propose and demonstrate an ideal relationship between man and robots in visual forms, utilizing the superior technologies and unique ideas, to contribute to the improvement of technology and sensitivities in this field.

Lend wings to your imagination and fully demonstrate your unique ideas. Flexible ideas are welcomed. We are anticipating delightful performances, but entries that only intend to provoke laughter will be rejected.

Although this contest is named "the Partner Robot Games", the term "robot" in this event also includes devices which are not controlled by a computer. Any device that is used to support man in some way can join the games. If the device is very useful, it will be used in practice and sooner or later may be computerized because of the need to upgrade and some robot functions may be added to it.

It is not necessary that the "robot" has a very robot-like appearance. It can take a quite different form such as a simple box appearance. Such a shape may be more common in the field of welfare and nursing care.

I hope you enjoy watching the games, or even participate in the games with your own robot.

Eiji Nakano

Game Division

Overview

With the theme of "Robot as a partner of man", contestants have to compete in creating a more functional robot that has common basic functions such as mobility and the ability to handle objects, with some original functions added by the contestant's unique imagination. In this division the participants address the question: "What kind of service from a robot would please an elderly person who lives alone?" You can imagine various tasks, such as bringing a drink, feeding a pet, watering a flower or dancing with the master. Lend wings to your imagination! If a robot's performance succeeds in making elderly people laugh and be happy, the contestant will get a high score. This is your chance to put your creativity on display.

Please note that there will be several obstacles in the game field and the floor will be carpeted to make the robot's movement difficult, but we hope that the contestants will be able to clear such hurdles easily.

Game rules

1. Situation before the start of the contest.

a. There will be five obstacles (01, 02, 03, 04, 05) on the contest field that have been placed in predetermined positions (see Fig. 1).
b. A player(s) must stand in Area 1 or Area 2 to give a command to the robot from that position. There will be no restriction on the number of the players. After the start of the game, the player(s) can move to another place.
c. The robot will be placed inside the Starting Area (S).
d. There is an object on the table in Area 1 that will be carried by the robot.

2. Start of the Game

The contestants can start the game with a signal from the main judge. The clock will start with the signal.
First, the player in Area 1 or Area 2 will send a command to the robot to start the tasks. The contestants can use any manner of command; a voice command, remote control or other means, as long as it is clearly recognizable to the judges and spectators. The robot must make some response to the command.
From that time on, the contestants cannot control their robots manually, except for cases where a robot gets out of control or where the main judge gives permission for intervention.
When the robot does not show any reaction to the player's command within three minutes after the main judge's starting signal, the game will be ended at that point.

3. Robot tasks

The robot must complete all the following tasks within the specified game period.

Task Receive a command to start the tasks from the stand-by area (the Starting
Task 2: Move from Area 1 to Area 2.
Task 3: Carry an object on the table in Area 1 to another place outside Area 1.
Task 2: Perform some work in Area 2.
Task 5: Notify the judges that all tasks were completed.

If a robot succeeds in performing the same task more than once, or carries out an extra task(s) which has been notified in advance, the team will get a higher score. The working order of the tasks should be reported to the entry desk on the day of the contest.

Points to note:

- With regard to Task 1, it is recommended that the robot checks whether the command is an error before it starts on the task.
- In Task 2 the robot may touch the obstacles during the game. However, obstacles (O1, O2, O3, O4 or O5) which fall down during the game are left as is. The robot may raise the fallen obstacle into place or remove it from its

path.

- Each team must bring the object which will be used in Task 3.
- The contestants can freely decide the content of Task 4 which will be performed in Area 2. The task can be feeding a pet, watering a flower, dancing with a man and so on. The contestants may bring any necessary item, person or animal in the game field. However, they must ask permission from the Committee in advance when they plan to use an animal(s), or some item which may be difficult to clean up, for example spills from real water or a powdery material.
- The response of the robot in Task 1 and Task 5 must be clearly recognizable to the main judge, the other judges and spectators.

Detailed game rules

1. In principle, the person who stands in Area 1 or Area 2 at the start of the game should be a member of the team. However, an Executive Committee staff member can stand in on behalf of the contestant by request.

2. Table 1 (T1) (see Fig. 2) which is made of plywood with the thickness of approximately 10 mm will be placed in the game field. The top and bottom boards and the leg of the table are painted mat blue with water paint. It is also permitted to bring in and use a similar-sized table.

3. Obstacles (O1, O2, O3, O4 and O5) (see Fig. 3) are gray, rigid PVC pipes (VU100, JIS K6781-1984). The sawn ends of the pipes will be left as they are.

4. Contestants may bring in markers and/or their own small items to provide an interesting new story development to the contest, provided that these do not deviate from the purpose of the contest. These can be freely placed within the contest field during the period of pre-contest preparation; however, careful thought should be given so that these do not constitute a danger to spectators and others. (For example, if a laser is used, it must be Class 1 or lower.) The judges will carefully consider these.

5. The Committee will also provide the following items for contestant's free use:
   a. An extra table which is similar to the table in Section 2 above.
   b. A round office chair (320 mm-diameter seat and height of approx. 430 mm. See Fig. 4.)
   c. A commercially available, colorless, transparent plastic glass (see Fig. 5) with a diameter of 70 mm, a height of 90 mm and a weight of approx. 4 g, will be provided for contestants. Three table tennis balls (official orange balls with a weight of 2.5 g and a diameter of 38 mm) will be used to simulate the juice in the glass, in order to avoid problems in cleaning up the spills.

6. The term "approximately", when used in reference to size, means that the objects shall not deviate from the stated dimensions by more than 20%. This limitation does not apply to weight.

7. Contest time, retries, end of contest.
   a. The game period that is given first is 5 minutes. When the first task of making a response to the command (Task 1) and the transfer from Area 1 to Area 2 (Task 2) are completed in this period, the game period will be extended for 5 minutes.
   b. Each team shall have a maximum of 2 minutes for preparation before the start of the contest. If the preparation is completed before this 2-minute allowance, the contestants may signal to the referee and the contest may start. If the contest has not started even after the 2-minute preparation time has passed, then the contest shall be ended at that point. If, for some special reason, the 2-minute preparation time period needs to be extended, the contestants shall discuss the matter in advance with the organizing committee.
   c. Contestants may request up to two retries if their robot experiences trouble during the contest and is unable to continue.
   d. If a request for a retry is granted, from that time until the contestant's signal that preparation is completed is approved, the contestant may repair or adjust the robot; however, during this time the contest clock will continue to run.
   e. In the case of a restart, the contest field is returned to its state at the start of the contest, and the total points scored

by the contestant until that time are reset to 0 points. Note that the elapsed time is not reset.

f. Irrespective of whether or not the contestant signals that their preparation for a restart is completed, if the contest field has not been returned to the state that it was at the start of the contest, the referee shall temporarily withhold the permission for a restart until the contest field is ready. The period of this permission withholding time shall not be added to the elapsed contest time, and no repairs or adjustments to the robot will be permitted during this time.

g. The contest shall end if any of the following occur.

(1) The elapsed time exceeds the stipulated contest time (3 minutes, 5 minutes, 10 minutes).

(2) The signal by the contestants that they have completed the contest is approved.

(3) If either the robot or the contestants commit an act of disqualification (specified below), the referee shall signal disqualification.

8. Disqualifying actions

a. The robot touches the floor outside the boundaries of the contest field.

b. Any contest equipment is willfully damaged or made dirty.

c. The spectators or other people involved in the contest are placed in danger.

d. Other actions that are in clear violation of the purpose of the contest are committed.

9. Robot specifications

a. At the start of the contest, the robot must not have a width exceeding one meter and a depth exceeding one meter. There is no height restriction.

b. There is no weight restriction.

c. The robot must be independent. Wireless communications between the robot and a computer (remote brain) are permitted. A manual remote control is also permitted, but higher points will be given to the automatic operation using a computer or other device.

d. The robot may separate into parts.

e. The term "robot" used here in the Game Rules refers to "all devices installed by contestants on the game field to play the game, except those in Section 1 - 5 of the [Detailed game rules]". "Independent" means that the robot is not physically connected by cables to anything but itself; therefore, even if the robot separates into pieces on the contest field and these are connected to each other by cables, these shall be regarded as part of the robot. On the other hand, computers or power sources located outside the contest field are not treated as parts, so if the robot is connected to them by cables, the robot shall not be deemed "independent".

10. The structure of the contest field

a. This contest merely consists of a framework, etc., laid out directly on top of a floor to form the contest field (see Fig. 1). The floor will be carpeted.

b. There are no anchoring devices between the contest items and the contest field floor; therefore, the contest field frames, etc., may move if the robot presses against them hard enough. Even if the frame parts are moved during the contest, they shall not be repositioned unless the contest field is reset to its initial layout for a restart.

11. Point scoring standards

a. The performances of the robots will be marked on the basis of 100 points: 50 points for technical points and 50 points for judge impression.

b. With regard to the judge impression, the originality of idea, reliability, practicability, safety and possibilities will be evaluated.

c. As for technical points, the judges will give maximally 10 points for each of the following tasks:

Task Successfully receives the command to start the tasks and makes some

Task 2: Successfully moves from Area 1 to Area 2.

Task 3: Successfully carries an object on the table in Area 1.

Task 4: Successfully performs some work in Area 2.

Task 5: Successfully notifies the judge in some manner of the completion of all tasks.

12. Selecting the winner

a. The winner shall be the team that obtained the highest points in total of the technical points and the judge impression points. The second prize shall be awarded to the runner-up.

b. In addition to the awards for a contest winner and a runner-up, there will be a technical award, an originality award, a challenging spirit award, an award for unique invention, an award for saving energy, an award for the best relationship between man and machine, and a special award from the judges. These awards may be changed without notice. The most outstanding robot in the Game Division and the Demonstration Division will be awarded the Partner Robot Grand Prix (this prize may not be awarded when there is no robot that is suitable for the prize).

13. Acquisition of items used in the contest.
   a. A photograph of the carpet on the floor of the contest field is shown for reference in the Partner Robot Game's Web site.
   b. The photographs of the items in Section 2, 3 and 5 of the "detailed game rules" are also displayed on the Web site of the Partner Robot Games.

For contestants --- Points to note:

- A contestant can have more than one entry to the contest, but each entry must be his or her original work.
- If a contestant plans to apply for a patent, a utility model, etc. for his/her robot, please finish the application procedure before the contest.
- All expenses for the entry to the contest such as postage and portage must fall on the applicant. The entry is free.
- The Executive Committee shall disclaim all responsibility for accidental damages to the entries.

For inquiries please call the Executive Committee of Partner Robot Games.

Fig. 1 Contest stage plan
Area 1
Area 2

Fig. 2 Table

Fig. 3 Obstacle

Fig. 4 Office chair

Fig. 5 Juice cup

Demonstration Division

Overview

With the theme of "For the welfare of the aged and physically challenged people", the contestants must demonstrate that their robots can, even to a limited extent, reduce the inconveniences of senior citizens or physically challenged people, and make them happier.

A robot can either have a very robot-like appearance or not look like a robot at all. It is permitted to control a robot manually all the time.

Exercise your imagination to please and impress spectators and the judges. For example, a robot can be an improved wheelchair, a new kind of physical support device or self-help device, a pet robot, a foot-operated mouse, a new type of voice recognizer, a barrier-free product, universal goods and so on.

We welcome entries that are fun, beneficial and very unique. However, demonstrations which only seek to provoke laughter will be rejected.

Details of the contest

- A 2,500 mm x 4,600 mm frame (the same one as that used in the Game Division) will be used for the Game field. Only the frame will be installed without any table or obstacles. The floor will be carpeted.
- The demonstration time is 5 minutes. The time can be extended up to 10 minutes at the main judge's discretion.
- The judges will score points to the contestants for their work's (1) originality, (2) reliability, (3) practicability, (4) safety and (5) possibility.
- In addition to the awards for a contest winner and a runner-up, there will be a technical award, an originality award, a challenging spirit award, an award for unique invention, an award for saving energy, an award for the best relationship between man and machine, and a special award from the judges. These awards may be changed without notice. The most outstanding robot in the Game Division and the Demonstration Division will be awarded the Partner Robot Grand Prix (this prize may not be awarded when there is no robot that is suitable for the prize).

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The 1st Partner Robot Games

Application Form

* This form must reach us by the deadline: June 30, 2001 (Sat.).

No.	*
Name of robot	
	[Abbreviation in less than 10 letters]:
Name of team leader	
Organization name	
	[Abbreviation in less than 10 letters]:
Address	
Division	1. Game Division

Description of the robot (device):

Comment on the contest: