2003 RULES OF ROBOTRACE

Robotrace is a competition in which robots run in a specified oval course to determine which is the fastest. Robots that enter robotrace races are called "robotracers".

1. Rules for Robotrace

1-1.   Robotracers must be self-sustained, and not externally operated, by wire or by radio, except at the time of starting.

1-2.   No addition, removal, replacement or change shall be made to the hardware or software of a robotracer by the operator during a contest. It is however permissible to make minor repairs.

1-3.   A Robotracer shall not exceed 25 cm in overall length, 25 cm in overall width and 20 cm in overall height.

2. Rules for the Course

2-1.   The surface of a course shall be painted in black, and the circumference shall be indicated by white lines, 1.9 cm in width.

2-2.   A course shall be in the shape of an oval composed of straight lines and arcs, its minimum turning radius shall be 15 cm.

2-3.   The radius of curvature of the arc shall be at least 15 cm, and the distance between points of curvature variation shall be at least 15 cm.

2-4.   The total length of a course shall be no more than 60 m at its circumference. A course may intersect (the angle of intersection shall be 90 ± 5 deg.) (See Fig. 3), however, robotracers shall not turn left or right at an intersection.

2-5.   The starting line and the goal line are to be located in the straight section of the circuit, and the goal line is to be located 100 cm behind the starting line.   A starting marker and goal marker are to be affixed at the starting line and the goal line on the right side pointing in the direction of the race. A starting gate and a goal gate shall be placed at the starting line and at the goal line, respectively. These gates shall be 40 cm in width and 25 cm in height on the inside. The area between the gates shall be called the "start-goal area" (See Fig. 4, 5, 6).

2-6.   The areas within 25 cm of the starting line and goal line are to be straight, and the areas within 25 cm before and behind the intersection shall be straight.

2-7.   A corner marker shall be affixed on the left side in the direction of the race (See Fig. 7) at each point where the curvature of the course changes.

2-8.   The circuit surface of a course shall be level as a rule, however, portions inclined

at a maximum of 5 degree may be included.

3. Provision for Races

3-1.　To time it takes for a robotracer to make the circuit of a course shall be recorded as the record lap time of the robotracer.

3-2.　After the course is disclosed, the operator is not to feed any information on the course into the robotracer.　In addition, the operator is not to revise the course-related information or eliminate it partially by operating a switch, etc., during the contest.

3-3.　To determine the lap time of a robotracer, the period from the time when the sensor at the starting line detects part of the body of the robotracer to the time when the sensor at the goal line detects part of the body of the same robotracer shall be clocked. However, no measured lap time shall be regarded as a record unless the entire body of the robotracer passes through the goal line.

3-4.　Each robotracer shall be provided with three minutes, and may run three times within this time limit.

3-5.　Robotracers shall start within the defined start-goal area, and shall go in the specified direction. However, a series of runs may be made without interruption.

3-6.　Robotracers must automatically come to a stop within the start/goal area, and remain there for at least two seconds after completing a run.

3-7.　A robotracer's run shall be deemed to end when the robotracer stops for more than 2 seconds or goes off the course during its run.

3-8.　The operator shall not touch a running robotracer unless instructed to do so by the tournament committee chairperson, or unless intending to withdraw the robot from the race and authorized to do so by the chairperson. The tournament committee chairperson shall comply with a request to withdraw from the race only when the robotracer becomes unable to run.

3-9.　If the body of a running robotracer completely goes away from the lines, the robotracer shall be considered to have gone off the course.

3-10.　The lighting, temperature and humidity of circuits shall be the same sa those of ordinary indoor environments. No request to adjust the lighting shall be complied with.

3-11.　The tournament committee chairperson may demand from operators such explanation concerning their robotracers as he / she deems necessary. The chairperson may direct operators to give up racing, disqualify them and take any other necessary measures at his/her discretion.

[Notes]

(1)　Loading a program or changing a ROM during a tournament is not permitted. It is also prohibited to connect a robotracer to any newly developed device or console box, separate from the body, to give instructions related to the execution of programs.

(2)　If, after the starting procedures, the robotracer comes to a stop or goes off the course and does not reach the starting line, the robot shall be considered to have made a run.
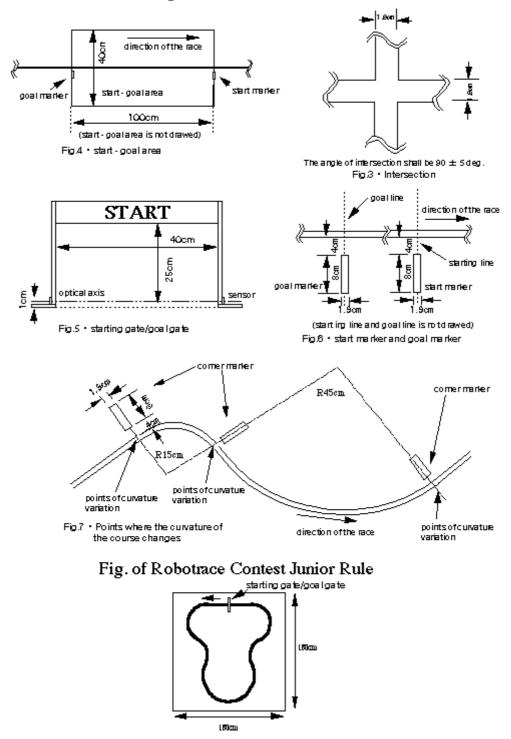
(3)　Even if a robotracer completes each run and crosses the goal line, if it does not automatically stop within the start/goal area, its run will be deemed invalid.

(4)　A course may have arcs with different curvatures linked continuously. (See Fig. 7)

(5)　Differences in level of 1 mm or so may be formed in courses.

(6)　The sensors at the start line and the goal line (illustrated in Fig. 5) shall be of the penetrating infrared type, with the optical axis horizontal and positioned approx. 1cm above the circuit surface.

(7)　Complaints about the grip on the floor surface will not be accepted.

Fig. of Robotrace Contest Rule

Fig.4 ・ start - goal area

direction of the race
start - goal area
goal marker
start marker
40cm
100cm
(start - goal area is not drawed)

The angle of intersection shall be 90 ± 5 deg.
Fig.3 ・ Intersection

1.8cm
8cm

START

40cm
25cm
1cm
optical axis
sensor

Fig.5 ・ starting gate/goal gate

goal line
direction of the race
4cm
4cm
8cm
8cm
goal marker
start marker
starting line
1.9cm
1.9cm
(starting line and goal line is not drawed)
Fig.6 ・ start marker and goal marker

corner marker
corner marker
1.5cm
8cm
4cm
R45cm
R15cm
points of curvature variation
points of curvature variation
points of curvature variation
direction of the race

Fig.7 ・ Points where the curvature of the course changes

Fig. of Robotrace Contest Junior Rule

starting gate/goal gate
180cm
180cm