Robots' Intellect 2020
Candy collection

1.　The task

An autonomous robot must collect as many candies in an obstacle course and bring them back to the starting area within the time limit.
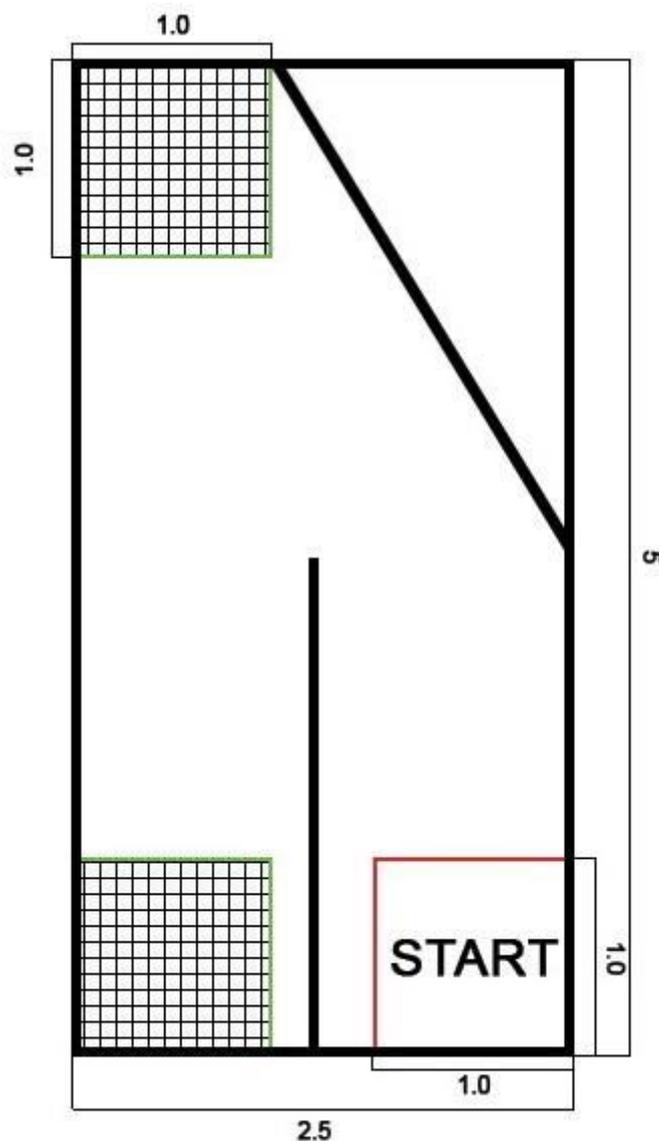
2.　General rules

1. It is strictly forbidden for robots to injure any participants or viewers.
2. It is forbidden for robots to damage the course, obstacles or any other items of organizer's inventory, unless it is explicitly a part of competition.
3. Robots must be autonomous. During the match human input isn't allowed, unless it's specifically allowed by competition.
4. It is forbidden to intentionally cause any harm to other participants or robots.
5. Robots must be registered until the organizer's specified date.
6. Robots must pass qualification before participation. Robots that are late for qualification must get competition coordinator's permission to pass qualification after official qualification time.
7. During qualification, each robot will be assigned a unique number, which must be put on the robot, in a clearly visible location.
8. Competition coordinator has the final say on all questions and problems during the competition.
9. The organizers keep the right to alter/edit the rules, accordingly informing the participants about it.
10. Violation of the rules above will result in disqualification or criminal liability.

3.　Requirements

1. Fully autonomous. No human inputs or interference is allowed. All of the computations must be done within the robot. Robot can only use external beacons if the beacons are placed by itself and within the course area.
2. Weight must not exceed 20 kg.
3. No larger than 0.8x0.8x0.8 m.
4. Cannot break, alter or in any other way damage objects inside the obstacle course.
5. It is prefered that the robot would be started and stopped using remote control.
6. If a robot does not meet these requirements during the inspection, the creator will be asked to modify his robot to meet those requirements. Priority will be given for those who haven't checked in their robots. Failing to meet the requirements until 30 minutes before competition starts, will result in disqualification from competition.

4. The obstacle course

1. Dimensions of the tracks are 2,5 m x 5 m.
2. Wall height will not be smaller than 0.5 m (thick black lines in Fig. 1) .
3. In each marked area there are 2,5 kg of candies (checkered zone in Fig. 1).
4. Dimensions of one candy is approximately 3,5x1,5x1,5 cm.
5. The starting area is marked in red tape (red zone in Fig. 1). Red tape is contained in the starting area. Anything over it, is not a starting area.

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5. Team

1. Team can't contain more than 5 people.
2. The number of robots presented by a team is unlimited.

6. The competition process

6.1. General rules

1. The participants will have 3 attempts.
2. If a robot fails to start moving at the beginning of an attempt, it can be repaired, modified by the team, while the robot is still in the starting area and has not left it. Once it leaves the starting area, no other modifications can be made.
3. During an attempt, it is allowed to start over from the starting point, but the collected candy will be taken back.

6.2. The start

1. The participant will be invited to the competition area.
2. Robot will be placed in the start area by the participant. The referee will inspect if the robot is placed correctly within the starting area.
3. The referee will ask if the participant is ready. And give a countdown from 3 to start the attempt by starting robot either remotely (preferred) or manually.
4. Referee will start a 5 minute countdown timer using a computer program.

6.3. The time

1. A single attempt will last for 5 minutes.
2. Between attempts there will be at least a 30 minute break.

6.4. The end

1. After 5 minutes, the amount of candies that are in the starting zone will be counted.
2. The referee will ask to stop the robot. If the robot is not safely removed from the track within 30 seconds, the attempt will be nullified.

6.5. Awarding points

1. 1 candy is awarded by 1 point
2. The candy must be fully within the starting area.
3. If all of the candies were collected and returned to the start area before the time limit, then that participant will be ranked by time with other participants who managed to achieve this.
4. The candy inside the robot will be counted after time limit, if the robot is fully within the starting area and fully stopped.