

# Wheeled Robots for Obstacles Avoidance

## 1 DESCRIPTION

In this competition the robot must perceive the course environment and avoid obstacles from a start zone to an end zone. The simulated "scene" or "arena" will be bounded by four walls. From there obstacles can be added to the scene to better test the robot's skills at avoiding obstacles and going from an initial start zone to an end one.

The robot may be:

- Built from scratch by the participant.
- Or built from any combination (an hybrid robot).
- Design: Robot must be a ground wheeled vehicle.
- Length: Maximum length is 35 cm.
- Width: Maximum width is 35 cm.
- Height: Not to exceed 25 cm.
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## 2 Enrolment rules

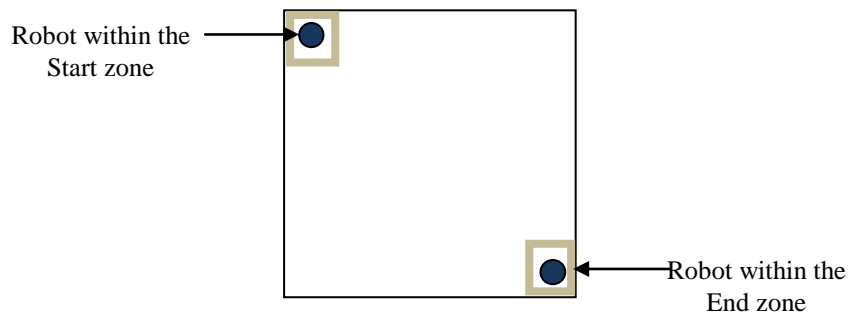
1. Any participating robot has to submit itself to the tests of the homologation.
2. The tests of homologation consist in verifying that the dimensions of the robot correspond to the technical specifications.
3. Any robot not satisfying the tests of homologation is excluded from the competition.
4. The ratification homologation will be realized the first day of the competition.

## 3 Evaluation rules

### a. COMPETITION

1. The robot must compete based on its ability to perceive the course environment and avoid obstacles from a start zone to an end one, without human assistance in any form during competition.

2. The arena of the competition will approximately be 2.80 m by 1.60 m long and 7 to 10 cm height. The all arena has a Wight color.
3. The starting zone will be in the left corner as seen in the next figure, and the End zone will be in the right top corner. The starting zones are placed in the back corners of the table. Each zone is a square. At the beginning of the competition, the robot must be placed fully contained within the start zone. The robot is regarded as arrived once it enters the end zone.
4. Obstacles on the course can consist of various colors (white, orange, brown, green, black, etc...). Natural obstacles or manmade could also appear on the course.
5. Participants are allowed to make repairs in the scene to help robot in localization it in the scene.
6. Beacons and cameras may be installed to help with navigation.



### b. EVALUATION

1. The winner will be decided based on a common point system.
2. Every robot receives a note by adding obtained points.
3. The winner robot is which obtains the maximal note among the participants.
4. If two teams are for equalities, a new test between both will occur to decide the final winner.

#### Competition abilities:

	Points
Avoid an obstacle	+50
Fail in avoiding an obstacle	- 25
Avoid a wall	+20
Fail in avoiding a wall	- 20
Run Time	$+(7-T (mn)) * 100$
Arrive to destination	+100
Not arrive to destination	- 300

**-A run time is limited to 7 minutes.**