



SUMO CHALLENGE: BEAR RESCUE

Bear Rescue 6/11/2015

1. Short description of the competition

The aim of the robots in this category is to detect a small bear-mascot in a simple maze and transport it to the destination.

2. Process of the competition

Robots start the game at the designated starting area (which is also the final field). At a sign from the judge robots start the game. The aim is to find a way on the court (which is a simple maze), which leads to a small bear-mascot. After detecting the mascot, robots have to transport it to the base point in any way. The aim is to complete a task in the shortest time.

3. How to perform a task

Robots can do the task in two ways: stand-alone or using remote control.

3.1) The autonomous robot must accomplish the task without operator assistance. The robot can use communication with an external computer for program execution and calculations, but it is impossible to use operator assistance. The robot moves on the pitch using the mounted sensors.

3.2) The remote-controlled robots can also take part in this competition - in this case it is possible to issue control commands the robot in any way (eg. Using Bluetooth, infrared or radio communication) by one or two operators. Issuing commands must be done wirelessly - ie. physical contact with the robot on the pitch is not allowed.

3.3) In the final classification of the competition will be promoted robots that do the task in a fully autonomous manner.

4. Description of the pitch/field

4.1) The pitch for this competition has overall dimensions roughly equal to 2.8 mx 1.5 m. The substrate may occur minimum breaks and inequality, which, however, should have no impact on the running competition.

4.2) The starting point (and therefore final) is located in the lower left corner and bounded on three sides by walls. The walls on the court form a simple maze. The top half of the field does not contain any of the walls and space in which is located the mascot.

4.3) The walls have a height of 10 cm and a width of 1.2 cm. The robot can scan area above the surface of the walls, while performing the tasks must go through the maze -It is not allowed to jump and maneuver over the walls, or the intentional damage. The whole pitch (and therefore both the board and the wall) is white.

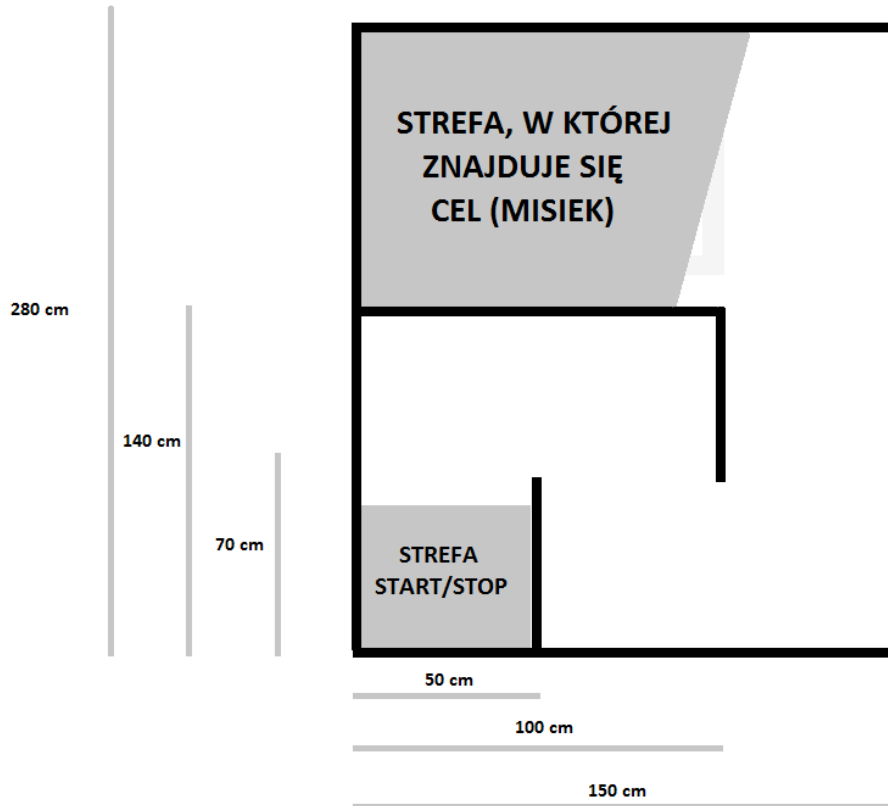
5. Robots

Robots do not have specific requirements for dimensions. The robot can be any height, width and height, but it should be noted in width and height corridors along the route. Because of the weight of the robot base does not exceed 5 kg (although expected works are of lesser importance).



SUMO CHALLENGE: BEAR RESCUE

6. The dimensions of the field



7. The methods of autonomous overcoming the maze

Robots can overcome the maze in any way. They can use a terrain map and driving on a programmed route or holding a sufficient distance from the walls. To simplification of competition on the route there is a black line width of 19 mm (made of black duct tape) that robots can use so as to partially overcome the route. However, the detection of the bear-mascot may require additional sensors (touch, distance, or else) which may be located within 40 cm from the end of the line.

8. "Moving" of the bear-mascot

The robot can carry the bear-mascot in any way: pushing, holding a suitable gripper or dragging. The task is completed when the bear-mascot is in the base point.

9. Dimensions of the bear-mascot

Dimensions of the bear-mascot are not clearly defined - in a sitting position the bear-mascot should be about 15-20 cm high, although it is suggested to place any of gripper (or another piece dedicated to transfer



SUMO CHALLENGE: BEAR RESCUE

/ move the bear-mascot) at a height of not more than approx. 12 cm above the field. During the competitions two different types of the bears can be used - So that the team could choose more suitable.

10. Timing

- a) the time is measured from the signal given by the judge until completion of tasks (Robot transport the bear-mascot to the base point).
- b) in the final classification will be promoted robots that do work in the way autonomous. Robots are performing a task autonomously in case of successful. The quest subtracted 40 seconds from the end time
- c) the duration of one trial may not exceed five minutes - in case of default tasks ,judge stops the drive. If the robot gets stuck, or for a long time does not move the place, the judge has the right to terminate the test earlier (in this case the job is not included).

11. The competition

The tournament will be held in two phases. The first will be the testing phase, the aim of which is to check like a robot copes with the implementation of the competition task. Each team will have the opportunity to test your robots so as to correct any errors or select appropriate strategy to overcome the route. The results of the test phase have no meaning for the final classification. Final results are determined by comparing the results of the finals. For the final classification will be taken the best time to travel - so it is possible boot robot in both autonomous and remote control. Quantity possible attempts in the final phase will be determined before the start of competition, but they are two or three attempts for each team.

12. The sample route

