

# Robot's Intellect 2023

## Labyrinth

### 1. The task

The goal of this match is to test the autonomous robot's ability to find the optimal path from one point in the maze to the next. During the match, the robot navigates a closed maze. The match is won by the robot that manages to complete the run the fastest.

### 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 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 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 for robot

1. Maximum robot's weight: 1 kg.
2. Maximum robot's size: 16x16 cm (length, width).
3. The Robot's height is not limited.
4. The Robot can not change it's size.
5. The Robot can not emit gasses, liquids or dust.
6. The robot can use the information about the maze collected in previous runs.
7. The robot can only collect information about the maze during the runs.
8. The robot is required to have START-STOP button or remote control.

### 4. Team

1. Team can not contain more than 5 members.
2. The number of robots presented by a team is unlimited.

## **5. Competition field**

1. The walls and base of the maze are white.
2. The maze is composed of 18x18 cm squares. The whole maze is composed of 16x16 such squares.
3. The minimum width between the two walls of the maze is 17 cm.
4. The paths of the maze can branch into two or three other paths.
5. There are multiple paths from the beginning of the maze to the finish.
6. The start of the maze is located on one of the corners of the maze.
7. The end of the maze is located on another corner of the maze.
8. The height of the walls of the maze is 10 cm.
9. There are no obstacles in the paths of the maze.
10. The whole field is one floor

## **6. Competition progress**

1. After the robot has registered, the judge indicates the start and end points of the robot's run.
2. One robot has 3 runs in the maze.
3. One run can not last longer than 5 minutes.
4. At the beginning of the run, one team member puts the robot to the starting point, the judge asks if the participant is ready, counts from three and starts counting the time of the run and the participant starts the robot.
5. During the run, the robot cannot use external assistance, otherwise the run gets stopped.
6. When the robot is fully reached the finish area, the participant stops the robot and the judge stops the timing and marks the time.
7. If the robot stops and does not move for 30 seconds during the run, the run is stopped.
8. If it becomes obvious that the robot will not be able to overcome the run, the participant and the judge have the right to stop the run.
9. If the robot does not move from the start, the participant can make changes to the robot during the run, but the run time is not stopped. When making changes in this way, the participant has 2 minutes to fix the robot, otherwise the run is stopped.
10. At the request of the participant, the participant can take a 20 minutes break between runs to make changes to the robot, but with a delay of more than 5 minutes, the robot loses one run.
11. If the robot is unable to overcome the run, due to extraneous fault, the robot may start the run over with the permission of the judge.

## **7. Deciding the winner**

1. After all the robots have completed all the runs, the judges select the robots that have completed their runs the fastest.
2. If there are multiple robot's that have completed the maze in the same shortest time, then the winner is decided by the second fastest runs of those robots.