Practical Robotics Olympiad

RoboFinist competition rules

Version 4.0 dated February 10, 2025

1. General Provisions

Each team completes tasks independently.

1.1. Task Description

The robot must complete 3 olympiad tasks in the allotted time and get the maximum number of points.

1.2. Contest Categories

«Practical Robotics Olympiad» is held in the following categories:

- «LEGO» - the oldest member of the team is 15 years old or less in the year of the competition;
- «ARDUINO» - the oldest member of the team is 19 years old or less in the year of the competition.

1.3. General Restrictions

Teams of no more than 3 members participate in the contest.

Using of any kind of software is allowed.

Participants are prohibited from using any sources of information (including the Internet, remote and portable media, clues and advice from third parties, etc.) during the course of solving tasks, designing and programming robots, except directly authorized by the Organizers.

The total time allotted for all tasks is set by the Organizers on the day of the competition, but not more than 4 hours.

Additional restrictions may be imposed at the discretion of the Organizers.

One team may participate only in one category.

2. Requirements for the Robotic Kits

A PC (tablet, smartphone) for programming the robot is provided by the participants themselves at their own discretion and without restrictions.

One team can use only one PC.

Participants will be provided with the following robotic kits according to the category:

- «LEGO» - MINDSTORMS EV3 45544 Basic Kit (original or adapted copies);
- «ARDUINO» - ARDUINO® controller and components.

Only robotic kits provided by the Organizers is allowed to use.

In cases established by the Organizers, the participants may use their own kits. These robotic kits must be checked by the Organizers for compliance with the originals before the start of the competition.

3. Specifications of the Field and Tasks Description

Specifications are given in the text of tasks issued on the day of the competition.

The Olympiad tasks are prepared according to the following recommendations:

- 2 tasks for the development of a mobile robot that moves on the field and interacts with physical objects;
- 1 task for the development of a static robot that interacts with physical objects while staying in place;
- all tasks are designed in such a way as to avoid the possibility of trivial solutions (e.g., moving by using encoders instead of using light or distance sensors);
- the maximum number of points for completing tasks is the same, or it differs in proportion to the difficulty of the task (e.g., the maximum for a task is 100 points);
- - if a team achieves the topscore on the first attempt, the team can get extra points for the remaining time (e.g., if a team completes a task with the maximum score in less than 2 minutes, the team gets 1 point per each 10 seconds of remaining time);
- the minimum number of points during the task can be scored for a trivial initial action (e.g., knocking over the first can - 5 points);
- when the robot performs the same type of actions, the amount of points increases with each subsequent action performed (e.g. knocking over the first can - 5 points, then 5 more points per each subsequent can knocked over: 10 points for the second can, 15 points for the third one etc.);
- penalties are higher than points for correct actions (e.g. knocking over a white can - 5 points, knocking over a black can - 7 points penalty).

4. Contest procedure

Before the Olympiad begins, each team is given a Russian text in one copy describing the tasks and criteria for their evaluation. At the request of the team, an authentic version in English can be issued.

Teams can perform tasks in any order.

The team passes the robot assembled and programmed to solve the selected task to the Judges for qualification for compliance with the requirements of the task and the general requirements of the Olympiad.

The team places the qualified robot to the field to perform the task. No more than 2 minutes are allowed to complete the task, unless otherwise specified in the task.

There are 3 attempts to complete the task. The maximum score is reduced by 20% for the second attempt and by 40% for the third attempt. The percentage of reduction can be changed by the Organizers on the day of the competition.

The maximum score is an integer number of points that can be scored on the condition of a particular task by fully completing it, without taking into account the extra points for the time.

5. Disqualification

The team will be disqualified in the following cases:

- the team used parts of the robotic kits that are not included in the kit issued (or agreed) by the Organizers;
- the team used unacceptable sources of information to solve the tasks.

6. Scoring

The order of calculation and the maximum possible number of points for the performance of tasks are specified in the text of the tasks on the day of the competition.

The attempt with the highest number of points is counted for each task.

The result is the sum of the total points for the performance of all tasks and the total time spent on the performance of all tasks.

7. Procedure for Determining the Winner

The winner is the team with the highest score.

If the points are equal, the team with the minimum time spent on the performance of all tasks gets the advantage.