ROBOFINIST

Intellectual Sumo 15X15 Educational Kits

RoboFinist competition rules

Version 2.4 dated August 19, 2024

1. General Provisions

The match is held between two teams. One team plays one robot.

1.1. Task Description

The robot needs to push the opponent out of the ring. The match continues until the team gains the set number of points.

1.2.Restrictions

A team must meet the following requirements, unless otherwise established by the Organizing Committee of a particular Event:

- the number of participants in the team is 2 or less (the number of coaches/team managers is not limited)
- the oldest member of the team is 15 years old or less in the year of the competition.

Additional requirements may apply by the Educational, Age or Design category of the competition, in case the corresponding category is indicated in the name of the contest (see the General Competition Rules).

In the «Educational Kits» category the following additional restrictions apply to the robot:

- exposed metal parts of the body that may come into contact with the field or another robot are prohibited, with the exception of fasteners (screw, nut, bolt, etc.). It is allowed to place metal parts inside the robot structure at a distance of at least 5 mm from the outer edge of the body;
- it is forbidden to use a voltage higher than 9 V.

2. Requirements for the Robot

The robot must meet the following requirements:

- length - not more than 150 mm;
- width - not more than 150 mm;
- weight - not more than 1000 g;

- height - not limited.

The robot must perform a movement or any other action after 5 seconds from the start of the program.

The accuracy of the robot weight measurement is determined by the accuracy of the measuring device.

The robot can grow in size after the start of the match, but should not be physically divided into parts, and must remain one piece robot during all the round. The match is considered to be lost if robot loses any parts that total weight is more than 2% of the robot's maximum allowable weight. The measurement is taken at the end of the round.

The robot must be absolutely autonomous; remote control in any form is prohibited. The program run by the robot must be written by the participant only.

In the design of the robot it is prohibited to use:

- sources of interference designed to blind the IR-sensors of the opponent (e.g. IR-LEDs);
- absorbent materials and coatings that reduce the robot's visibility in the ultrasonic, infrared and other areas of the sensor spectrum;
- devices that disable the electronics of the opponent's robot;
- devices that can store liquid, powder, gas or other substances in order to blow off them toward the opponent;
- devices that throw objects at the opponent;
- sticky substances to improve the robot's adhesion to the ring;
- devices to increase the downforce such as vacuum pumps or magnets.

Tires and other robot features that come in contact with the ring must not be able to lift and retain a standard A4 sheet of 80 g/m2 density for more than 2 seconds.

Robots must not be able to damage the ring or other robots or cause injury to players in any way. Edges with a radius of less than 0.1 mm are not permitted. The Judges or Organizers may request to cover the edges with adhesive tape if they find them too sharp.

Participants have the right to prompt structural and software changes of the robot (including repair, replacement batteries, etc.) in the allotted time between rounds and matches provided that the changes do not conflict with the design requirements for the robot and do not violate the Competition Rules.

3. Specifications of the Field

The field consists of a flat surface in the center of which there is a ring with an external space around it.

The ring is a black disc with a white border line around the perimeter. The border is part of the ring. The side surface of the ring is not part of the ring.

There is free external space around the ring limited by boards. The boards must prevent robots from falling out of the ring, ensuring the safety of the participants and the safety of the robot.

Ring Specifications:

- diameter - 770 mm;
- height - 25 mm;
- border width - 25 mm;
- free external space - at least 500 mm.

4. Contest Procedure

Before the start of the competition, all robots are checked for compliance with the requirements.

Quarantine may be arranged at the discretion of the Organizers:

- before the start of the competition, all participants place the robots in a specially designated Quarantine area;
- during the match, operators can take robots from the Quarantine area only and only at the Judge's command;
- after the end of the match, the operator places the robot back to the Quarantine area.

One round lasts up to 90 seconds or until one of the robots scores 1 point.

One match lasts up to 3 rounds or until one of the robots scores 2 points.

4.1. Placement of the Robots

At the command of the Judge, the operators approach the ring to place their robots on it.

Operators place their robots in opposite quadrants.

Each robot must be located at the boundary of the ring within the limits of the corresponding quadrant. The projection of the robot must cover the boundary of the ring at least partially. Once the robots have been placed, they must not be moved.

Operators place their robots synchronously at the command of the Judge.

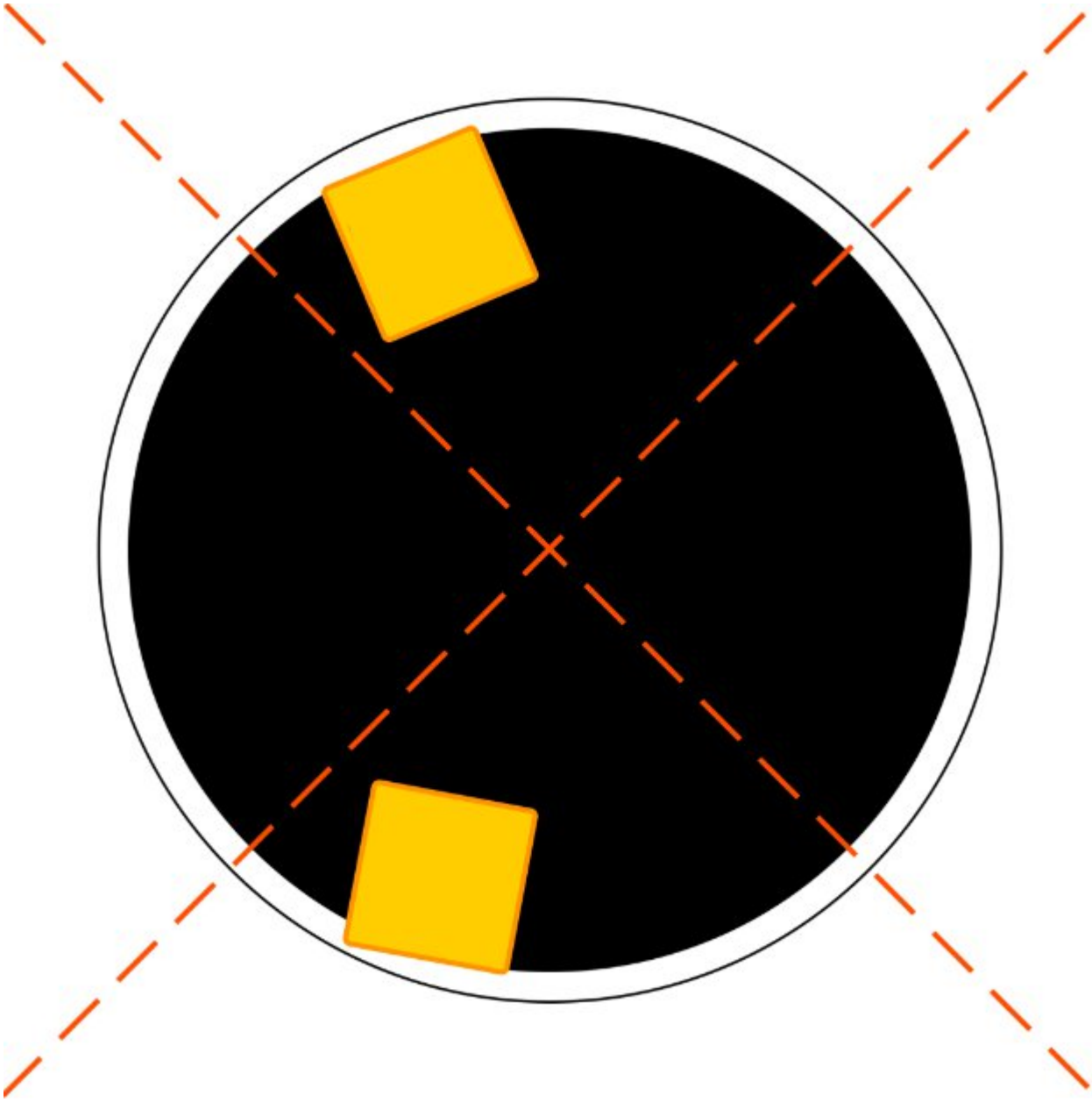

Figure 1. Placement of the Robots Example

4.2. Start

The Judge announces the start of the round with a voice.

After the round is announced, the teams must launch their robots and move away from the ring before the robots start moving.

The round starts after a 5-second delay.

4.3. Stop and Resume of the Match

The match and round is stopped and resumed when the Judge announces it.

The round must be stopped and replayed in the following cases:

- one of the participants violated the rules;
- the robots are in clinch and not moving (or cercling in place) for more than 10 seconds;
- the robots move or stop without touching each other for 10 seconds;
- both robots touch the space outside the ring at the same time, and it is impossible to determine which robot touched it first.

A round cannot be replayed more than 3 times. If the result of a round cannot be determined after the third replay, no robot will score points in that round.

The team gets two points, and his/her opponent is declared the loser in this match if this opponent has not placed the robot in the ring at the beginning of the match.

When the match is declared over, teams must immediately remove the robots from the field.

5. Violations

Violations penalized by a warning during the match:

- the participant's request to stop the match for no good reason;
- the participant spends more than 30 seconds preparing for the next round from the end of the previous one, unless the Judge has extended the time;
- the participant delays the placement of the robot (moves the robot around the field during placement, places the robot for more than 1 second, places the robot after the opponent, etc.);
- the robot starts to act in the first 5 seconds after the announcement of the beginning of the round.

Violations penalized by awarding 1 point to the opponent:

- the participant touched the robot or the ring during the match without the Judge’s permission;
- two warnings in the same match.

6. Scoring

The round ends and one point is awarded to the robot in the following cases:

- the opponent touched the space outside the ring, including the side of the ring;
- the robot continues to move, and the opponent does not move within 5 seconds (the opponent is declared unwilling to compete).

7. Procedure for Determining the Winner

The robot with 1 point wins the round.

If the round ends with the expiration of time, then none of the robots gets points.

The robot with the highest score wins the match. If the points are equal, the match results in a draw.

If it is necessary to determine the winner of the match in case of equality of points, additional rounds will be held. The robot that wins the extra round is declared the winner of the match. If there is no winner at the end of the additional round, the Judges choose the winner based on the evaluation of tactics, aggression and activity of opponents.

The winner of the competition is the team that won the first place in the final match.