TECH ROCKS HERE!

2020

DNIPRO

BEST ROBO FEST

ROBO SUMO

SPECIFICATION

1 Introduction

Participants are to make a robot that can push the opposing robot out of the white line of the ring most effectively.

2 Competition categories

Class	Height	Width	Length	Weight
Autonomous sumo	25 cm	25 cm	25 cm	1000 g
Controlled sumo	25 cm	25 cm	25 cm	1000 g
Authorial autonomous sumo (competition will take place only with 5 or more participants)	25 cm	25 cm	25 cm	1000 g
Authorial controlled sumo (competition will take place only with 5 or more participants)	25 cm	25 cm	25 cm	1000 g

3 Team Makeup

A team consists of 1–3 participants and a coach. Each team is represented by one robot.

Class	Age of participants
Autonomous and controlled sumo	Unlimited
Authorial autonomous and controlled sumo	Unlimited

4 Determining the winner

- Teams compete for points in matches, each of which is divided into 3 rounds. The team that wins the round receives 1 point.
- The winner of the match is the team that received the most points.
- The tournament bracket will be formed based on the number of registered teams.

5 Prizes for winners

All participants will be awarded with commemorative participation certificates. The winning teams will receive certificates, trophies and/or other prizes or gifts from the Organizers and Sponsors of BestRoboFest.

6 Technical requirements

6.1. Robot Requirements

- All robots must be autonomous (except for the controlled robots class).
- Robot cannot significantly increase in size after the start of the match. The robot cannot divide into pieces (elements).
- The separation of screws, nuts or any other parts during the match is permissible if the total weight is less than 5 g.
- Prior to competition, the robot must attend and pass a technical inspection.
- Each robot receives a unique registration number. The robot must display this number at all times in order to be identified by the referees and spectators.

6.2. Requirements for autonomous LEGO-robots

- The robot must be built only from LEGO spare parts.
- Use of LEGO Mindstorm NXT and EV3 sets for functional parts of the robot (motors, sensors, controllers) is permitted.
- One robot cannot have more than 3 engines.

6.3. Requirements for controlled LEGO-robots

- The LEGO robot must be controlled by special mobile apps.
- The robot must be built only from LEGO spare parts.
- Use of LEGO Mindstorm NXT and EV3 sets for functional parts of the robot (motors, sensors, controllers) is permitted.

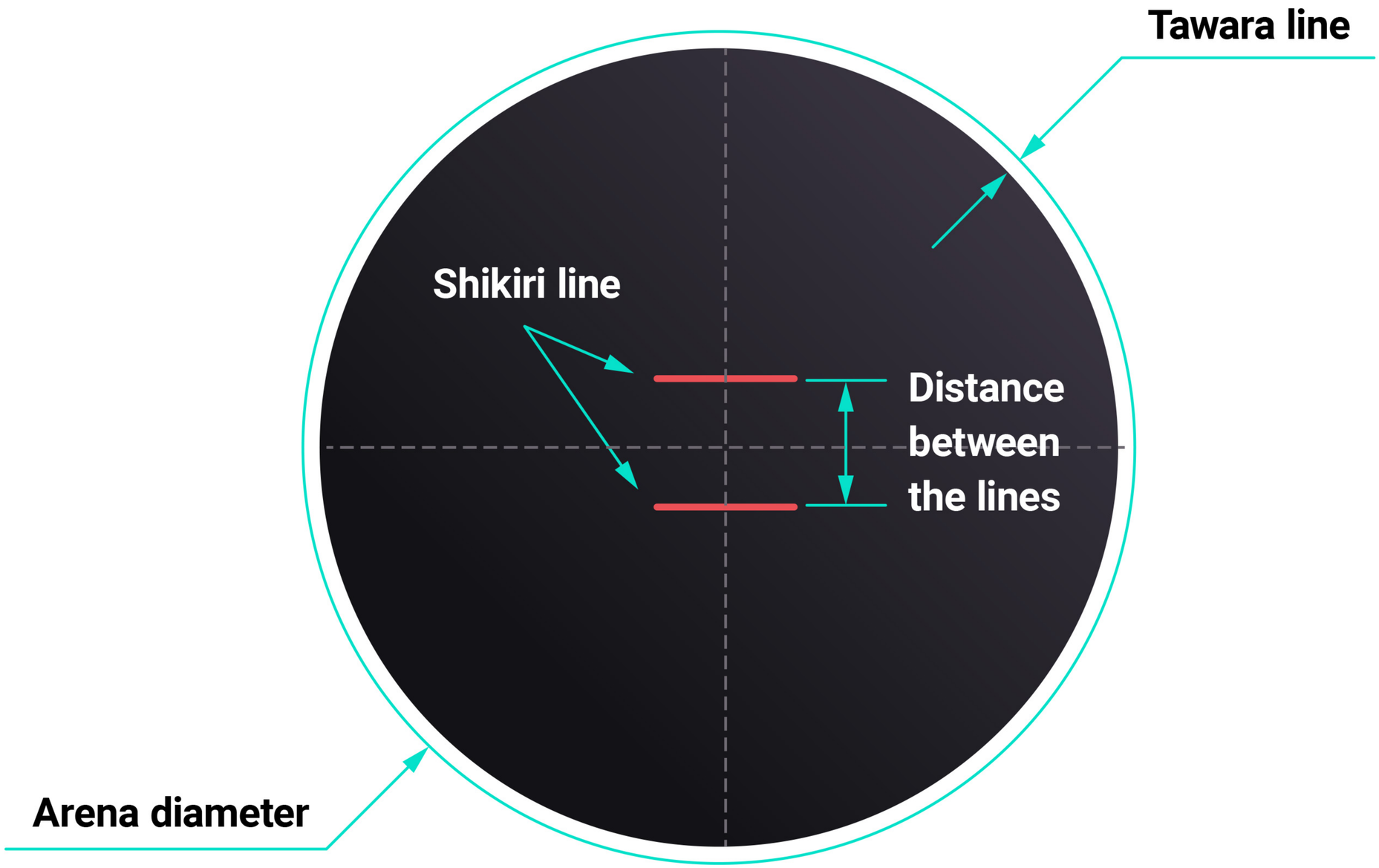
6.4. Robot designs are not permitted to include or allow the following

- Parts that may break, scratch or damage the arena.
- Parts that are designed to damage the opposing robot (pushing / lifting the robot is not considered intentional damage).
- Any flammable devices (elements).
- Adhesives designed to improve ride quality.
- Vacuum pumps and magnets.
- Interference devices, such as infrared LEDs, that affect the opposing robot’s infrared sensors.
- Devices that contain objects, liquid, powder or gas for the purpose of throwing at the opposing robot.

6.5. Arena specifications

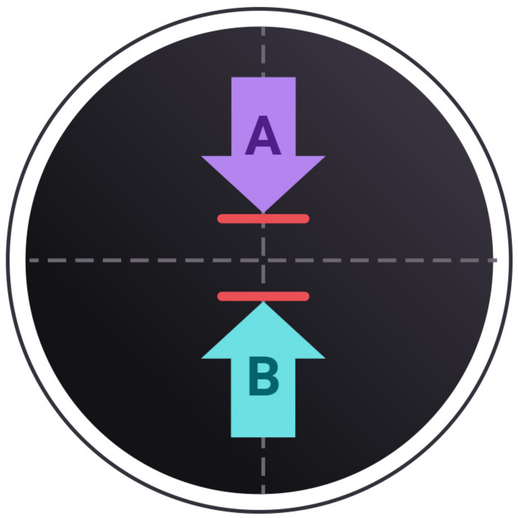
- The ring is a wooden circle covered with a banner fabric, the size of which depends on the competition class of robots. The ring sizes for each class are listed in the table below.
- The playing surface is defined as the inner area of the ring excluding the boundary line. The space outside the boundary line is the outer zone of the ring.
- The center of the ring is marked with a red dot.
- The starting areas of the robots are marked with red stripes.
- Behind the outer edge of the ring is outer space. The size of the external space for each class is determined separately and listed in the table below. The outer space is marked in a different color. This area is to be kept clear during the round.
- For all sizes listed in the table, the tolerance is 5%.

Class	Arena height	Arena diameter	Tawara ine width	Distance between the lines	Shikiri line width	Shikiri line length
Robo Sumo	5 cm	100 cm	5 cm	13 cm	1 cm	13 cm


Tawara line
Shikiri line
Distance between the lines
Arena diameter

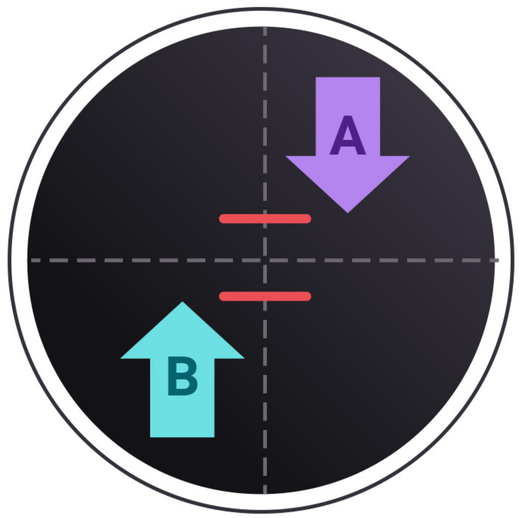
7 Competition procedure

- The competition takes the form of rounds between two teams who control the robots. Each match consists of 3 rounds of 30 seconds each. Rounds are held in a row. The referee determines the winner of each round. The robot who wins the most rounds wins the match.
- Robots are positioned differently at the beginning of each round. Details in the diagram below.



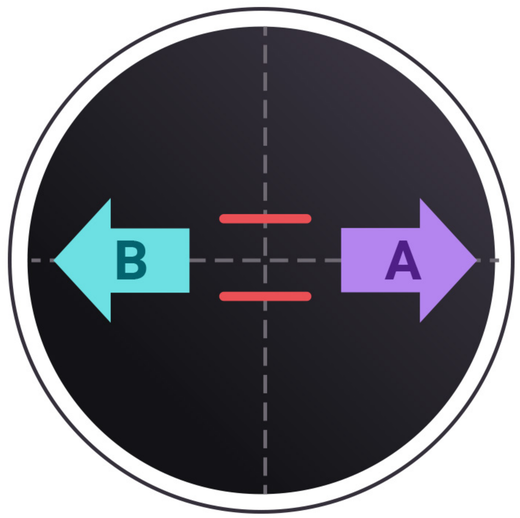
The first round

robots are face to face



Second round

robots are facing different directions (right, left)



Third round

robots are facing opposite directions

- Before the match, the robots are checked for dimensions and weight.
- At the direction of the referee, one participant from each of the two teams approaches the ring to place their robots. Operators are given 5-seconds to move away from their robots. Once the robot is set to the starting position, the referee asks if the operators are ready, and if both indicate ready, the "Start" command is announced. Participants launch their robots. Team members must not touch the robots during the round.
- The robots must proceed in a straight line and collide with each other. The victory in the round is counted if any part of the opposing robot touches the field outside the white line within 30 seconds. If no robot is outside the white line within 30 seconds, the robot closest to the center wins the round.
- The team that wins the round receives 1 point. The match is won by the team with the most points.
- In disputes, the referee may order a second round. If the winner cannot be determined by these methods, the decision to win or replay is made by the referee.
- If the winner cannot be determined in the three rounds, either an additional round is assigned or the winner is determined by a referee decision, based on the combat activity of the robots during the rounds.
- Participants have the right to make an operational design change between rounds (including repair, adjustment, batteries replacement, program selection, etc.), provided the changes do not impair the design requirements of the robot and do not violate the rules of the competition. The time allotted to carry out an operational design change is determined by the referee, but cannot exceed 4 minutes.
- If, during the round, any electrical part of the robot is not affixed securely and comes off or shows loose wires, then that robot forfeits the round.
- If a robot, in the opinion of the referees, intentionally damages or contaminates another robot or the field, the team may be disqualified.
- The round is considered over after the referee announces its results.
- If a team leaves the competition venue before the referee announces the end of the match, that team is forfeit.

8 Competition procedure

- Participants are responsible for their own actions during the events / activities of the Festival, and for the safety of their robots and any accidents caused by them / their own actions. The organizers / Organizing Committee of the Festival (competition) are not responsible for violations of safety rules and/or any damage caused by such violations. A 1.5-meter safety buffer zone is outlined around the ring, which prevents participants or spectators from approaching the ring within the specified distance.

The Organizing Committee of the Festival may make changes to the Rules no later than 2 weeks before the competition. In this case, the Organizing Committee is obligated to inform the participants no later than 10 days prior to the competition.