

MINI SUMO COMPETITION RULES



1. Introduction

This document outlines the rules for the Mini Sumo robot competition.

2. Description of the Competition

One operator and four helpers can be registered for each robot (there can be a maximum of 5 team members in total). However, only one operator is allowed to guide the robot during the encounter. The area where matches take place is called Dohyo. Both contestants who are called to Dohyo for the match accept the competition rules, winning conditions and must participate in the competition using only autonomous robots of their own making. A competition is held between two robots prepared in accordance with the category rules. The robots are placed on the dohyo by the contestants at the same time in a symmetrical manner determined randomly by the referee. After placement, competitors are given 30 seconds to adjust their tactics without moving their robots. After this period, intervention with the robots is not allowed. Competitors move as far away from the dohyo as possible and the referee starts the competition via infrared remote control. The robot that manages to throw its opponent off the dohyo wins a round. The robot that wins two rounds is declared the winner of the competition. The winning robot is announced by the referees.

2.1. Fixture

The competition format is determined by the tournament organizers depending on the number of participants. If the number of participants is large, subgroups are formed to decide which competitors will participate in the final tournament. In group matches, robots are divided into groups of 3, 4 or 5 depending on the number of participants. One or two robots with the highest scores in the group matches advance to the next round. Re-matching is made between the robots that advance to the next round, and this process continues until a maximum of 8 robots remain. Depending on the number of remaining robots, the competition continues in elimination or points format. If the competition continues with points; Each robot competes with each other and collects points for the round it wins. The robot with the higher score gets ahead in the rankings. If the scores of two robots are equal, the robot that won their mutual competition takes the lead. Ranks are determined according to the score ranking. If the competition continues with the elimination method; Quarter final, semi final, third place and final competitions are held respectively.



2.2. Classification and Rating

Fibonacci International Robot Olympiad Mini Sumo competitions take care to classify and grade by taking into account education level and age groups. It can be divided into 5 basic groups: kindergarten (0-6), primary school (6-10), secondary school (10-14), high school (14-18) and university (18+). The age group and education level of the team is determined by the age or education level of the oldest member of the team. **It is the responsibility of the team mentor to ensure that teams are registered in the correct age category.** If during the competition it is determined that the team is registered in the wrong age category, the robot of this team will be **disqualified from the competition**.

Note: Teams in the younger age group are allowed to compete in the older age group. The organizers reserve the right to check the age of contestants during the competition. In case of violation, the robot of the team that violated the rules will be **disqualified**.

3. Competition Field Description (Dohyo)

The competitions will be held on a round wooden field with a diameter of 77cm, called "Dohyo". The field is painted with a 72cm black circle in the center and the remaining area white, as shown in Figure 1. The white line on the outside of the Dohyo is called Tawara and is 2.5cm wide in white color. The area in the middle of the dohyo is matte black. The starting lines in the middle of the Dohyo, called Shikiri-Sen, are used to determine the starting positions of the robots and are painted in a dark color. Try to place the dohyo so that it is 5cm above the ground.

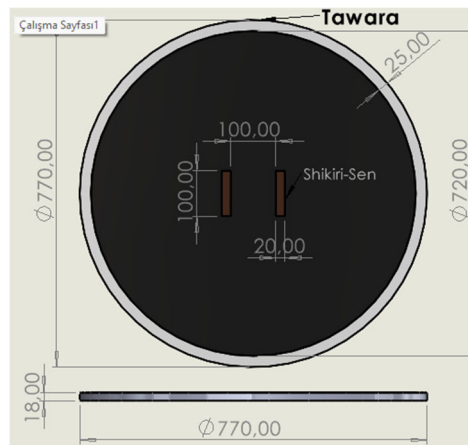


Figure 1: Dohyo Dimensions

Class	Height	Diameter	Materiel
Mini Sumo 500gr	2 - 5cm	77cm	Wood/Plastic

Table 1: Sumo Course Parameters



3.1. starting area

Robots can initially be placed in the user's desired position, with one side at the Tawara area (white edge line) and one side at the starting line, as shown in Figure 2. The robot must at least partially touch the Tawara area (white line). Once the robot is placed, it can no longer be moved. In cases where the winning robot cannot be determined, such as a draw, the referee may request that the robots start in a different starting position.

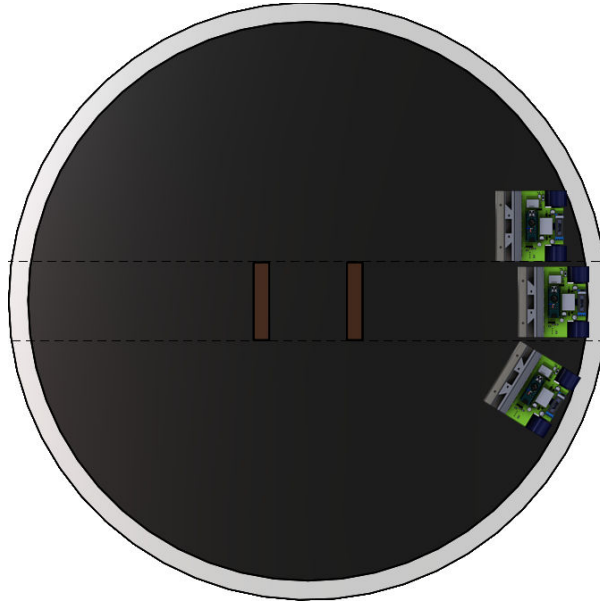


Figure 2: Starting positions of robots



4. Robot

4.1 Mini Sumo robots must have a maximum width and length of 10cm (100mm) and a maximum weight of 500g. There is no height limit, but the width and height values of the robots at every height must comply with this rule.

Class	Weight	Length*	Width*	Height*
Mini Sumo	500gr	10cm	10cm	There Are No Limits

Table 2: Size and Weight Limitations

4.2 Robots cannot be divided, cannot leave or throw away any part of themselves during the competition. Competitors must fix the parts of their robots in a way that they cannot fall, batteries falling, screws coming out, blades breaking, etc. In such cases, the weight of the falling parts will be checked. Pieces weighing 10g or more will cause the contestant to lose the round.

4.3 Robots can change shape (expand) during the competition.

4.4 Robots cannot contain equipment (e.g. flashing lights, mirrors) that will affect or blind the opponent's sensors. Robots use nets, ropes, etc. to prevent the opponent robot from working. They cannot use such mechanisms.

4.5 Robots must use the starting module or equivalent circuits in Annex 1 to detect the infrared starting signal sent by the referee. The contestant is responsible for any problems that may arise in robots that do not have a starting module with the features described in Annex 1.

4.6 The blades on the robots must be in a way that will not harm the rival contestant or the robot. During the competition control phase, the referees will make the necessary checks to ensure that the blades on the robots are not too sharp. However, if the robot damages the structure of the dohyo or significantly spoils the paint of the dohyo, it will be eliminated from the competition. The referee decides whether the robot violates this rule or not. Scratches that may occur when two robots fight against each other during the match are not included in this situation.

4.7 Competitors must adjust their robot's sensors to detect objects at a distance of 77 cm, which is the maximum diameter of the dohyo. Robots that detect any person or object farther away than this value and turn towards it and throw themselves out before their opponent will be deemed to have lost that round and any objections made in this case will not be accepted.



5. Match Rules

5.1 Competitors must be in the competition area, ready for the competition, within 3 minutes after the names of their robots are announced. Otherwise, the match will start and the side that does not show up will start to lose their preparation time.

5.2 After the match starts, the parties are given 1 minute of preparation time. At the end of the preparation period, both parties must be present with their robots next to the dohyo where the competition will be held. The side that is not in the competition area at the end of the preparation period is eliminated from the competition.

5.3 Parties have the right to one three-minute technical break for each match. The party taking a technical timeout may intervene in the structure of their robot. During the technical break, an assistant of the contestant can enter the competition area with their belongings. The contestant who is in the competition area cannot leave the competition area or give his robot to an assistant outside the competition area. During the match, the competing robot cannot leave the competition area for any reason.

5.3.1 If the other party wants to interfere with their own robots, they must also use their technical break rights at the same time.

5.4 The referee decides how the lineup will be in each round. After the preparation period is over, the referee explains to the parties how the robots will line up. As the referee counts down, the parties simultaneously place their robots on the Dohyo.

5.5 After the parties place their robots on the Dohyo, they are given 30 seconds to adjust their tactics without moving their robots. After this period, no intervention with the robots is allowed.

5.6 In the competition, if one of the robots does not move at all physically, and the other robot moves but falls on its own, there is a 10-second waiting period. If the robot that is not moving physically does not move within 10 seconds, the round is awarded to the robot that moved. (Moving at least 2 cm or lowering a flag, if equipped, is considered physical movement.)

5.7 Each round can last a maximum of 30 seconds. If neither robot wins within this time, the referee stops the match and the round is repeated.

5.8 The round ends with one robot touching the ground. The first robot to touch the ground is considered defeated.

5.9 In competitions, if the competition continues with points, 3 rounds are played in any case. If the competition is in elimination mode and a robot wins the first 2 rounds, the 3rd round will not be played.



6. Objections

The juries' decisions are final and not subject to subsequent review. If a solution cannot be reached with the juries, objections must be submitted immediately to the Fibonacci International Robot Olympiad Chief Referee. Complaints made after this point will not be accepted. In case of disagreement or disagreement, the final decision will be made by the Juries and/or organizers.

Note: Rude behavior will not be tolerated. A team that does not respect the decisions of the judges, referees or referees may be disqualified by the referee and/or event organizers.

6.1 Competitors cannot raise objections due to field factors after the round has started. These factors are eliminated by the referees with warnings made before the round.

6.2 The competitor may make a verbal objection to the referee for the result of a round after that round. When the next round begins, the contestant loses his right to verbal objection.

6.2.1 The contestant may present the evidence he/she has to the referee within the scope of the objection. The referee can decide according to his own logic when there is a situation outside the rules.

6.2.2 After the rounds are over, the contestant may submit a written objection to the verbal objection decision until the next round begins. This objection must be written and submitted to the chief referee in the form of a petition.

6.2.3 The chief referee makes final decisions on the objections made. Decisions cannot be appealed again.

6.3 Competitors who do not comply with the referees' warnings or disrupt the course of the competition will be disqualified.

6.4 Fibonacci robot competition reserves the right to make any changes it deems necessary in the rules.



7. Marking Robots

Robots must be checked by the referees before the tournament and labeled with number tags (Robot Number / Team IDs) . These stickers are provided by the competition organizers. The sticker cannot be placed on the robot or any other component that could interfere with the operation of the opponent's sensors. Before each new tour, robots must undergo technical control again.

8. Changes and Cancellations to the Rules

Changes and cancellations in the specifications are made by the main organizer of the competition in accordance with the regulations of the competition organizing committee.

9. Security Measures of the Competition

Class	gloves	Glasses
Mini Sumo	Necessary	Necessary

Table 3: Security Requirements

9.1 During the competitions, competitors are required to wear protective gloves and protective glasses. The mentioned protective equipment will be loaned to the competition if the competitor does not have it, but it is recommended to bring your own equipment for hygienic reasons.

9.2 Competitors will not be allowed into the competition area with any electronic device (e.g. phone, tablet, RF remote control).

9.3 Interfering with robots without stopping the match is extremely dangerous. Competitors who intervene despite this will be disqualified.

9.4 Robots with swollen batteries or leaked fluids cannot be raced. If dangerous situations such as short-circuiting or smoke are detected in a robot during the competition, the competition will be stopped and the robot will be disqualified.

10. Disclaimer

Mini Sumo Category is more dangerous than other categories due to the speeds the robots reach and the cutting elements they may contain, and competitors must work carefully and take the necessary precautions at every stage of the competition. Despite this, Fibonacci International Robot Olympiad Organizers disclaim all liability for any material damage or injury that may occur.



Appendix 1. Launch Module

The same remote control system used in RobotChallenge competitions such as RobotSM in Europe also applies to the Fibonacci Robot Competition. The purpose of the system is to ensure that the round starts fairly and quickly. For safety purposes the system is equipped with a kill switch. The system is based on an infrared transmitter operated by the referee. Infrared receivers on the robots. RC5 protocol is used in the launch module. The infrared transmitter uses a Manchester encoded bitstream at 38KHz. The message payload sent from the referee controller consists of a 5-bit address and a 6-bit command, which includes the remote commands (programming, start and stop) and the Dohyo ID.

The following table lists the remote commands and their respective payload contents: Table 4 shows the Remote commands.

command	RC-5 Message Area
Programming	Address[4..0] = 0x0B, Command[5..1] = Dohyo ID
Start	Address[4..0] = 0x07, Command[5..1] = Dohyo ID, Command[0] = 1
Stop	Address[4..0] = 0x07, Command[5..1] = Dohyo ID, Command[0] = 0

Table 4: Control Codes

Programming commands are used to write a new Dohyo ID in infrared. Robots' receivers just before the match. The referee's infrared transmitters are equipped with separate low-power IR LEDs to ensure that only nearby robots can receive certain commands. The programmed Dohyo ID is used to filter start and stop commands.

The start and stop commands have the same message address, but only the first bit of the message is used to determine the command field action. The robot's infrared receivers must verify that the Message's Dohyo ID is the same as the one programmed into the robot, and if so, take the appropriate action. The components of the infrared receiver should be placed on the robot so that the robot can receive messages from all directions.

The robot or launch module must be equipped with clearly visible LEDs to verify whether the referee has received the command from the infrared transmitter.

When a programming command is sent from the referee controller, the LED on the start module should blink twice quickly. When a start command is sent from the referee controller, the LED on the start module remains permanently lit.

When a stop command is sent from the referee control, the LED on the start module begins to blink continuously. You can find more information about the remote control system here: <http://www.startmodule.com>.

