

Sumobot Competition

Robots per Event:	Two each match
Length of Event:	1 minute per match (max)
Robot Weight Range:	Pls refer below
Robot Dimensions:	Pls refer below
Arena Specifications:	Pls refer below
Robot Control:	Pls refer below
Event Summary:	Two robots compete in a head-to-head match following the basic system of traditional human sumo matches. Robots are to be fully autonomous and self-powered. Weapons of any sort that pose as a potential danger to robots and humans are strictly not allowed.

1. Objective

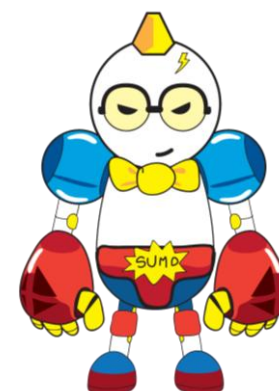
Participants are required to build a self-contained mobile robot that is able to push its opponent out of the specified ring according to the tournament rules.

2. Robot Specifications

- 2.1. Robots are required to use INEX microcontroller as the core processor of the robot.
- 2.2. A robot must fit within a square tube of the appropriate dimensions for the given class. The size of the robots depends on the weight categories.

CLASSIFICATION	CONTROL	WIDTH	LENGTH
1kg / 3kg (Wheeled)	Autonomous	20cm	20cm
1kg (Legged)	Wireless RC	25cm	25cm
5kg (Wheeled)	Wireless RC	25cm	25cm
BASIC (1kg)	Autonomous	20cm	20cm
		INEX ATX2 SUMO Kit ONLY AA batteries ONLY	

- 2.3. There is no height restriction.
- 2.4. Expanding robots are allowed after 5 seconds delay.
- 2.5. Robots will need to protect their sensors if necessary from any outside interferences.
- 2.6. Scoopers / sweepers of any sort or any form of structure that has the intention of going below an opponent (both expanding and not expanding) attached to any side of the robot must be colored BLACK.
- 2.7. **For the BASIC class:**
 - 2.7.1. All sumo robot parts must be taken from the standard INEX ATX2 SUMO robot kit only.
 - 2.7.2. No other parts outside of this kit is allowed to be used.
 - 2.7.3. Participants are allowed to use which ever kind of 6xAA batteries they prefer.
 - 2.7.4. Modification to any part in the kit is STRICTLY NOT ALLOWED.

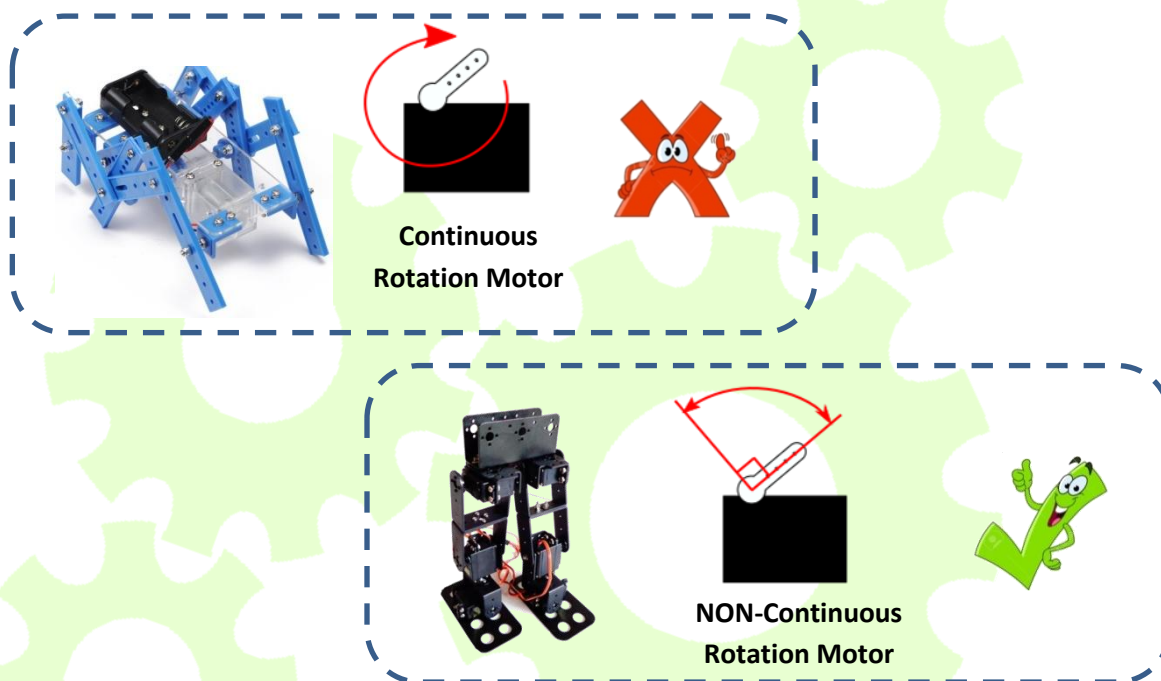


GAME RULES



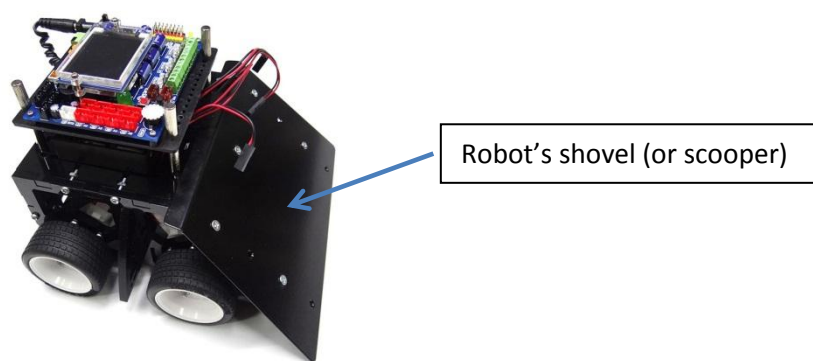
2.8. For the Legged class:

- 2.8.1. At least 2 legs are required for the robot.
- 2.8.2. All robots' legs need to mimic the articulation of the natural legs.
- 2.8.3. Continuous rotation method of propulsion of any kind is strictly NOT allowed.
- 2.8.4. There is no limit on the number of actuators used in the robot.



3. Restrictions on Robot Design

- 3.1. The robot must NOT have a device that interferes with the sensor operation of its opponent. e.g. Jammer, strobe light, laser & etc.
- 3.2. Robots' Shovel or lifting mechanism of any sort that comes into contact with the opponents must be dull black in color.



- 3.3. Robots shall NOT throw liquid or powder or other substances at the opponent.
- 3.4. Robots shall NOT employ any flammable devices as a weapon.
- 3.5. Projectile weapons or saw-blades are NOT allowed.
- 3.6. Robots shall NOT cause any damage to the arena & surroundings in anyway whatsoever.



GAME RULES



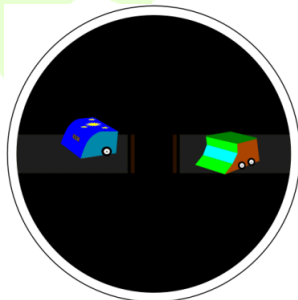
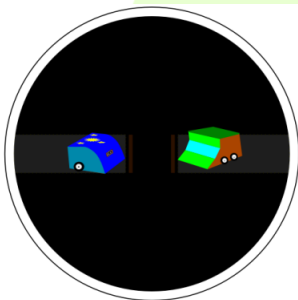
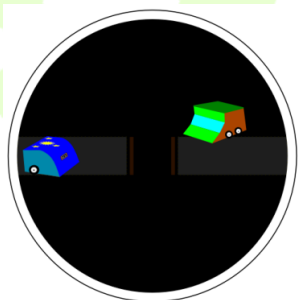
- 3.7. Robots shall NOT damage the arena deliberately.
- 3.8. Robots should NOT secure itself on the ring surface by using, suction cups, diaphragms, sticky treads, glue or other such devices.
- 3.9. Robots shall NOT use any form of compress air system.
- 3.10. Robots under the 1kg Junior, 1kg Senior, and 1kg Family Categories are NOT ALLOWED to use any form of external motor drivers apart from the microcontroller's. Referees are given the sole liberty to disqualify any such robots if found.
- 3.11. It's the Referee's sole discretion to disqualify a robot if it is deemed dangerous for this competition.

4. Game Rules

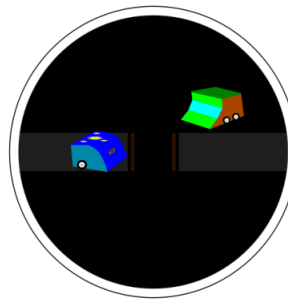
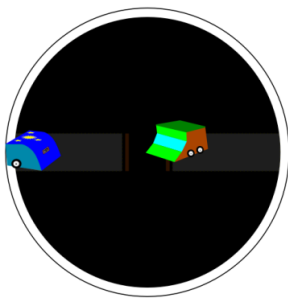
4.1. Placement of Robot During Match

- 4.1.1. At the start of the game, two players will approach the ring and prepare their robot. They will be given 1 minute service time to prepare the robot before the game starts.
- 4.1.2. Players will be asked to place their robot on the ring. The decision of who will place the robot first will be decided via a toss coin for the first match.
- 4.1.3. Players are allowed to place their robots in any area of their segment behind the shikiri lines (see placement guide below).
- 4.1.4. One player places his/her robot first then the second player places his/her robot while the first player watches. Adjusting the position of the robot after the placement is not allowed.
- 4.1.5. For the succeeding matches, the winner of the previous match places the robot first. In the event of a draw, the order of placement in the previous match is followed.

VALID POSITION



INVALID POSITION



GAME RULES



4.2. Robot Control

For the Autonomous Sumobot

- 4.2.1. Robot shall be autonomous. No external form of control is allowed. The robot is to be started with a single toggle-type switch or push switch.
- 4.2.2. After the signal of the referee (whistle), both players must press the switch of the robot. Pressing the switch in a delayed manner is not allowed.
- 4.2.3. After pressing the switch, the robot must move after the 5 seconds delay.

For the Remote Controlled Sumobot

- 4.2.4. The robot shall be remote controlled with any form of wireless control. No external physical intervention is allowed.
- 4.2.5. Participants should take the necessary considerations of their own wireless remote control interferences if any. Organizers will not be responsible for outside wireless interferences.
- 4.2.6. After the signal of the referee (whistle), both players must start to control their robot wirelessly.

4.3. Sumobot Game

- 4.3.1. A Sumobot game consists of 3 matches per game. Each match shall last for 1 minute. The winner of the 3 matches will move on.
- 4.3.2. If a game ends in a draw, a 4th match will be played. For the 4th match, the robot must be placed on the Shikiri line with its BACK touching the Shikiri line. See Figure 1.
- 4.3.3. If it is still a draw, a 5th match will be played. For the 5th match, the robot must be placed on the Shikiri line with its FRONT touching the Shikiri line. See Figure 2.
- 4.3.4. When all matches are completed and NO WINNER is found, the robot with the lighter weight wins the Yuhkoh point.

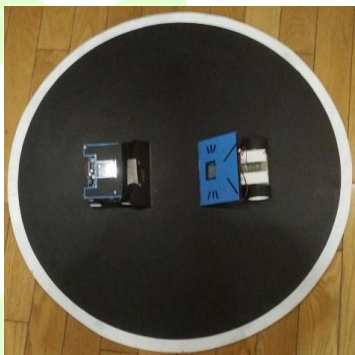


Figure 1

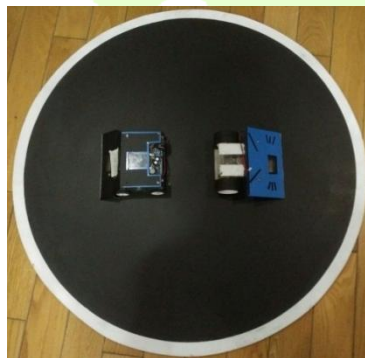
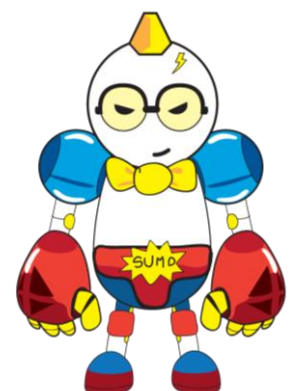


Figure 2



GAME RULES



4.4. Match Winner

A Yuhkoh point is a reward to the winner of a match. How to win the Yuhkoh point?

- 4.4.1. When a robot moves before the 5 second delay requirement, the other robot gets the Yuhkoh point.
- 4.4.2. When a robot does not move or spins around on the same location for 5 seconds, the other robot wins the Yuhkoh point.
- 4.4.3. When the other robot falls off outside the ring. The robot that remained in the ring wins the point. This is valid even if NO CONTACT is made between the robots.
- 4.4.4. When a part of the robot falls off or separates from the body while in the ring, the other robot wins the point. {exception for nuts and screws}
- 4.4.5. When ALL the wheels of a robot are not touching the ring's surface, the other robot wins the point. (Rule 4.4.2 will apply)
- 4.4.6. When all matches are completed and NO WINNER is found, the robot with the lighter weight gets the winning Yuhkoh.
- 4.4.7. When the player touches any part of the playing field or any robot in the game directly 2or indirectly during a match, the other robot wins the Yuhkoh point.

4.5. Draw

A match will be considered as DRAW:

- 4.5.1. When 60 seconds (including the 5 sec delay) has lapsed into the match.
- 4.5.2. When the referee cannot decide on which robot fell first.
- 4.5.3. When both robots are in a deadlock position for 10 seconds, a draw is called. A deadlock is when both robots contact without progress in the position.

4.6. False Start

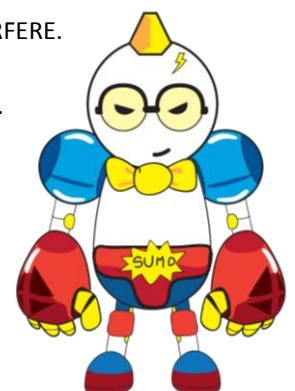
- 4.6.1. A false start is called when at the start of the match; the player fails to turn ON the robot.
- 4.6.2. During a false start, the player must take the robot immediately during the 5 second delay and tell the referee "FALSE START".
- 4.6.3. When the 5 seconds has passed, a false start can no longer be called. Rule 4.4.2 will apply.
- 4.6.4. A player CANNOT call two consecutive "FALSE START". On the second false start, the Yuhkoh point goes to the opponent.

4.7. Time-out

- 4.7.1. A player can only request 1 time-out for the whole game. Participants must signal a time-out to the referee at the end of a match.
- 4.7.2. During a time-out, the player who requested a timeout can service the robot while the robot of the other player must stay on the ring.
- 4.7.3. Robot can be repaired. Batteries CANNOT be changed. Adding of parts and programming the robot are NOT allowed.
- 4.7.4. Players MUST place the robot on the ring before the end of the 1-minute time-out. Referee signals the end of a time-out.
- 4.7.5. A Player that continues to hold the robot beyond 1 minute time-out and after the referee signal will lose the match.

4.8. Declaring Objections

- 4.8.1. Only players can state an objection to the call of a referee. COACHES CANNOT INTERFERE.
- 4.8.2. The player in the field calls the attention of the referee and say "I OBJECT!".
- 4.8.3. A table official/judge is called to the field in front of the two players and the referee.
- 4.8.4. The objection is stated to the referee and the judge witnessed by the other player.
- 4.8.5. The judge makes a FINAL DECISION within 60 seconds.



GAME RULES



5. The Tournament

- 5.1. Participants will be randomly paired up as opponents in their individual categories. The Sumo Game is played by elimination.
- 5.2. Replacing or Switching of Robot
 - 5.2.1. Participants are allowed to use only the same robot throughout the whole event. Robots and participants are identified during registration and caging.
 - 5.2.2. Repair of the robots is allowed. Replacing the robot is NOT allowed.
 - 5.2.3. Sharing of robots among participants is NOT allowed. All participants involved in such sharing of robots will be disqualified.
- 5.3. Caging
 - 5.3.1. Robots shall be inspected and caged before the start of the games.
- 5.4. Penalties
 - 5.4.1. Sportsmanly conduct is expected from players. Any misconduct, act of cheating, foul language or intentional action to harm the opponent or the robot shall be dealt with by the judges with the recommendation of the referee.
 - 5.4.2. Penalties can range from losing a match, a game or being banned from the game.

6. Sumo Ring

- 6.1. The Sumo Ring is made up of a circular wooden plank. The surface of the Sumo Ring is smooth and NOT RUBBERIZED.
- 6.2. The surface of the ring is painted black and white. The outer ring (border) is painted white and the inner ring is painted black.
- 6.3. Thickness of the ring must at least 2cm thick.
- 6.4. The height of the ring from the ground must be at least 5cm.
- 6.5. Shikiri lines consist of two painted parallel brown lines. It will be placed at the center of the ring. For your reference, see tables and figures below.
- 6.6. For 1kg Legged (RC), 124cm diameter sumo ring will be used.
- 6.7. For 1kg, 3kg, and 5kg, 154cm diameter sumo ring will be used.

