

# Gladiators of the Singularity

**Event Summary:** Two robots compete in a head-to-head match following the basic system of traditional human sumo matches. Robots are allowed no weapons and are not allowed to flip each other. The sole purpose is a pushing match between the two robots to force the other from the arena.

**Eligibility:** Classes 6th - 12th

## **RULES:**

### **Section 1: Team formation**

A team can have a maximum of 4 members. Participants may also participate individually but must represent their school.

**Note:** Only one member shall be allowed to control the robot in a single match. The whole match will be carried out by that controlling team member. (However, you may change the controlling team member in a different match.)

### **Section 2: Robot requirements and restrictions**

**Size of robot** - must not exceed 18 x 18 cm (length x width) and 15 cm in height.

**Weight of robot** - must not exceed 3kg.

**Control** - robots will be controlled manually through either wired controllers or wirelessly over radio, bluetooth, or wifi. NOTE: Robots cannot be controlled autonomously.

**Voltage** - Voltage across the robot at any point must not exceed 12v.

**Material** - Robots can be made with any material as long as they stay under the weight limit.

Power supply may either be on-board or off-board.

Sticky substances to improve traction are not allowed. Tires and other components of the robot in contact with the ring must not be able to pick up and hold a standard 3 x 5 inch index card for more than two seconds.

Parts that could break or damage the ring are not allowed. Do not use parts that are intended to damage the opponent's robot or its operator. Normal pushes and bangs are not considered intent to damage.

Devices to increase down force, such as a vacuum pump or magnets, are not allowed.

Edges must not be sharp enough to scratch or damage the ring, other robots, or players. Judges may require edges that they deem too sharp to be covered with a piece of tape.

Devices that throw things at your opponent are not allowed.

Devices that can store liquid, powder, gas or other substances for throwing at the opponent are not allowed.

Pre-built robots or configurable kits - Robots must be constructed by the participating team from scratch. While LEGO kits are allowed, use of pre-built or purchased robots will lead to disqualification.

### **Section 3: Conduction of match**

One match shall consist of 3 rounds, within a total time of 3 minutes.

Note: The following are not included in the time of the Match:

- (i) The time elapsed after the judge announces a point and before the match resumes.
- (ii) The time elapsed after a judge announces to stop the match and before the match resumes.

The team which wins two rounds or receives two points first, within the time limit, shall win the match. A team receives a point when they win a round. If the time limit is reached before one team can get two points,

and one of the teams has received one point, the team with one point shall win.

When the match is not won by either team within the time limit, an extended match of 2 minutes will be fought, during which the team which receives the first point shall win.

One point shall be given to the team whose robot forces the opponent out of the arena upon the judges' decision.

#### **Section 4: Scoring of points**

One point shall be given when:

1. A team legally forces the body of the opposing robot to touch the space outside the ring, which includes the side of the ring itself.

2. A point is also given in the following cases:

The opposing robot has touched the space outside the ring on its own.

Either of the above takes place at the same time that the end of the Match is announced.

3. When a wheeled robot has fallen over on the ring or in similar conditions, the point will not be counted and the match continues.

4. The match shall be stopped and robots will be reset under the following conditions:

The robots are entangled or orbiting each other with no perceivable progress for five seconds. If it is unclear whether progress is being made or not, the judge can extend the time limit for observable progress for up to 30 seconds.

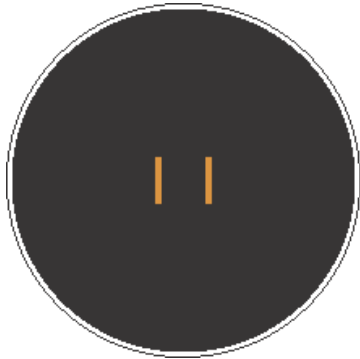
Both robots move, without making progress, or stop (at the exact same time) and stay stopped for five seconds without touching each other.

However, if one robot stops its movement first, after five seconds it will be declared as not having the will to fight. In this case the opponent shall

receive a point, even if the opponent also stops. If both robots are moving and it isn't clear if progress is being made or not, the judge can extend the time limit up to 30 seconds.

If both robots touch the outside of the ring at about the same time, and it can not be determined which touched first, a reset is called.

### **Section 5: Sumo Ring**



The sumo ring's dimensions are for a standard mini/kit sumo ring -

**Diameter** - 100 cm

**Height** - 2.5 cm

The sumo ring will have 2 lines parallel to each other. The bots must be placed behind each of these lines. Following are the dimensions for the lines:

**Width** - 1 cm

**Length** - 10 cm

**Separation** - 10 cm

Finally, the sumo ring consists of an outer border of width 2.5 cm.

### **Section 6: Matchmaking**

The teams will start by playing a league round - each team competes against every other team. The teams will be scored in the following way:

**Loss** - 0 points awarded

**Draw** - 50 points awarded

**Win** - 150 points awarded

At the end of the league round, the top four teams with the maximum points will be moved to the semi-finals. In case of a tie, the head-to-head score will decide which team is eliminated. In a case that the head-to-head score is also equal, a tiebreaker round will be conducted.

**For the finals and semifinals** - maximum time will be extended to 5 minutes, and the match will be a best of 5 rounds (first to 3 points wins). If the score is equal at the end of the 5 minutes, the time shall be extended and the first to get a point in this duration wins.