Sumo Challenge Rules

1 Challenge Overview

Design, build, and program an autonomous robot that can search for and push an opposing Sumo robot off an elevated fighting ring.

2 Division & Age Requirements

- **Lego 1kg Division:** 2-4 player per team, with all members aged 13 years or younger.
- **Lego 1.5kg Division:** 2-4 player per team, with all members aged 18 years or younger.
- **Open 1.5kg Division:** 2-4 player per team, with all members aged 18 years or younger.

3 Robot Specifications

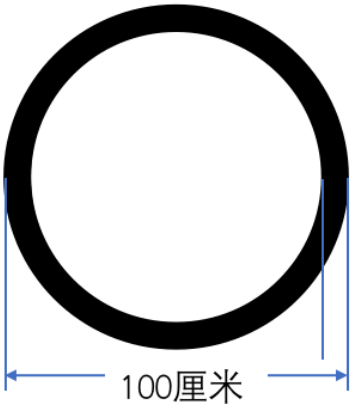
Category	LEGO 1 Kg Division	LEGO 3Kg Division	Open 3 Kg Division
Robot Platform	Standard LEGO components only. (≈$1,500).	Standard LEGO components only. (≈$1,500).	Unrestricted platform. (≈$1,500).
Robot Type	Fully autonomous robot.	Fully autonomous robot.	Fully autonomous robot.
Maximum Volume	Base dimensions ≤25 cm × 18 cm (height unrestricted). Base orientation fixed pre/post-activation.	Base dimensions ≤25 cm × 18 cm (height unrestricted). Base orientation fixed pre/post-activation.	Base dimensions ≤25 cm × 18 cm (height unrestricted). Base orientation fixed pre/post-activation.
Maximum Weight	1 kg	3 kg	3 kg
Controller Quantity	Multiple controllers allowed.	Multiple controllers allowed.	Multiple controllers allowed.
Sensor Type/Quantity	Unrestricted.	Unrestricted.	Unrestricted.
Drive Type	Unrestricted.	Unrestricted.	Unrestricted.
Motors/Servos	Unrestricted.	Unrestricted.	Unrestricted.

Additional Rules:

1. **Sharp Edges Prohibited**: Robots must not have any sharp edges.
2. **Destructive Mechanisms Banned**: Robots shall not incorporate structures designed to damage the arena or opposing robots. The use of liquids, powders, gases, nets, or rubber bands as offensive tools is strictly prohibited.
3. **Ramp Structures Permitted**: Robots may employ ramp structures to lift opponents.
4. **Thin Plate Restrictions**: Inserting thin plates beneath opposing robots or interfering with opponents' sensors through such means is prohibited. *Exception*: LEGO-built structures are exempt from this rule.
5. **Pressure-Enhancing Devices Forbidden**: Structures utilizing vacuum pumps, magnets, adhesives, suction cups, or similar pressure-enhancing mechanisms are disallowed.
6. **Friction Manipulation Prohibited**: Adhesive substances must not be used to increase traction.
7. **Claws/Sharp Anchoring Banned**: Robots cannot utilize claws, sharp edges, or pointed corners to anchor themselves to the arena.
8. **Cable Management Guidelines**: Zip ties or rubber bands may secure cables but must not serve as propulsion mechanisms.
9. **Frontal Identification Requirement**: A designated front-facing side must be clearly marked on the robot.

4 Field Specification

- **Material**: PVC foam board (Xuefu board), 1.7 cm thick.
- **Dimensions**: 100 cm diameter arena with 5 cm black border.
- **Supports**: Elevated 5 cm above ground, supported by blocks ≥1 cm from the edge.



Tournament Scoring

• Typically, we organize tournaments for the top 8 teams. However, if there are more than 8 teams due to ties, the Event Director may expand the tournament to 12 or 16, or may run a tiebreaker tournament to reach 8, 12, or 16 teams.

• Teams that advance will be seeded into the tournament bracket according to their overall score. Below is an example of our typical 8-team tournament bracket.

• The runners-up play for 3rd and 4th place based on the results of the semifinals

6 Robot Check-in

Before earning valid points, robots must pass on-site referee inspection.
Requirements are as follows:

1. **Front Identification**: The robot must have a clearly marked front-facing side.
2. **Functional Demonstration**: From the designated starting position, the robot must demonstrate:
    - Edge detection and avoidance capabilities.
    - Opponent-searching program execution.
3. **Base Area Compliance**: The robot's base dimensions must not exceed **25 cm × 18 cm**.
4. **Weight Verification**: The robot's weight must comply with division-specific limits.
5. **On-Demand Checks**: Referees may inspect robots at any time during debugging or competition phases.