RoboCup Junior Australia

QLD LEGO Sumo Bot Rules 2025

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Preface

Spirit

It is expected that all participants, students and mentors, will respect the aims and ideals of RoboCup Junior as set out in our mission statement. In turn, the volunteers, referees and officials will act within the spirit of the event to ensure the event is competitive, fair and most importantly fun. "It is not whether you win or lose, but how much you learn that counts."

Sharing

It is the overall desire of RoboCup Junior events that any technological and curricular developments will be shared with other participants after the events. Any developments including new technology and software examples, may be published on the RoboCup Junior website after the event, furthering the mission of RoboCup Junior as an educational initiative. Participants are strongly encouraged to ask questions of their fellow competitors to foster a culture of curiosity and exploration in the fields of science and technology.

Local Variations

These rules will be in use for the RoboCup Junior Australia Australian Open for the titled year. State and Regional events may implement variations of these rules. These variations will be communicated to the participants through email and/or on the relevant State Webpage on the RoboCup Junior Australia website prior to the state or regional event.

General Rules

General Rules have been introduced. Multiple sections of these Challenge Rules have been relocated to the General Rules to ensure consistency across all Challenges. Please ensure you read the General Rules, which can be downloaded from the Rescue Line Challenge Page on the RoboCup Junior Australia Website.

Notes/Advice vs. Rules

This document may include notes/advice to participants and mentors, plus rules that are firm. This has been done to remove ambiguity. There is a notation to indicate whether the content of this document is to be read as a note/advice or as a rule. Advice is noted in green. Rule changes for the new year are noted in red.

1 Sumo Bot Challenge

1.1 What is Sumo Bot?

1.1.1 Robot-sumo is an engineering and robotics competition in which **two robots** attempt to push each other out of a circular arena, in a similar fashion to the sport of sumo. Two robots compete in a head-to-head match following the basic system of traditional human sumo matches. Robots are allowed no weapons. The sole purpose is a pushing match between the two robots to force the other from the arena.

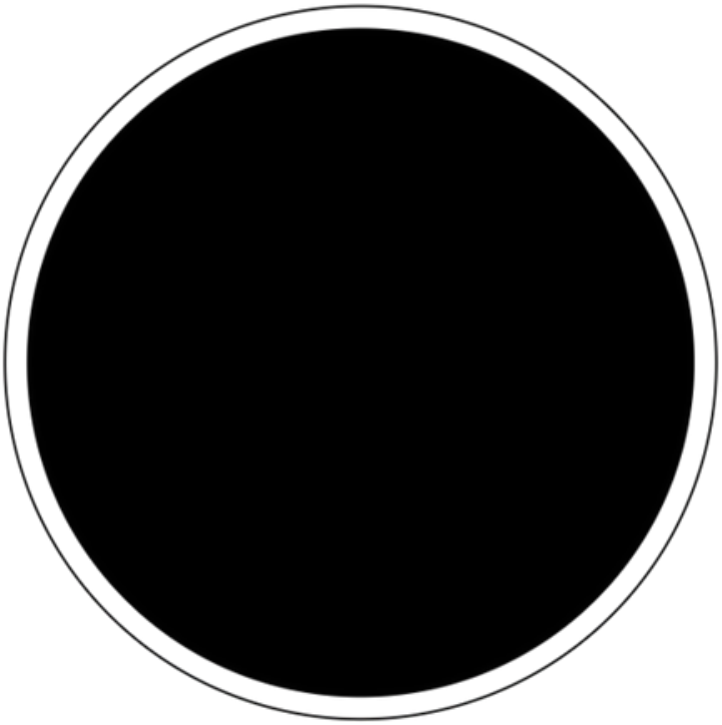
Robots must be **made out of LEGO** and should be powered by **LEGO robotics platform**. Student designed 3D parts **are permitted** however they **must be fastened to the robot by LEGO pieces** and be **original designs** (no repeated products).

2 Battle Arena

All measurements have a tolerance of 5%.

2.1 Board

2.1.1 The Sumo Battle Arena is a one meter diameter circle generally made from 8 to 12mm MDF. The arena features a 15mm white outline border.



2.1.2 The Sumo Battle Arena will be raised 10 to 15mm off the ground using timber blocks in four positions.

3 Robot

3.1 Robot Configuration

3.1.1 Robots are allowed a **total of 3 motors** and have **no more than 2 of these motors powering their drivetrain.**

3.1.2 **Multiple sensors can be used** however, robots are **limited to a single control source** (Spike Hub or EV3 Hub).

3.1.3 Robot must be able to within a **25cm x 18cm rectangular frame**. There are **no height restrictions** for robots and robots can expand outside the 25 x 18 size limit only after robot handlers have started the match.

3.1.4 The robot must be **850g or less in weight.**

3.1.5 Robots must have a **3 second wait coded to begin when program starts.** Timers built into programs are allowed and competitors can start with programs loaded using button or timer functions.

3.1.6 The robot is not permitted to have any mechanical parts that intentionally disconnect from the robot or that could cause **intentional harm to another robot (weapons).**

3.2 Robot Control

3.2.1 **Robots cannot be started from a secondary device,** such as a laptop, tablet, or mobile phone. **Robots must have their program downloaded to them and be able to be started/restarted manually by the Robot Handler.** Robots must be autonomous in operation. If the robot has the capability for remote or any other wireless control (such as by Bluetooth, Wi-Fi or another form of wireless communication), the team must prove that they have disabled the capability for third party operation in some way. This could be by software, hardware or degree of human interaction. Robots that do not comply may face immediate disqualification from the event. Distributed control is allowed but must operate without human interaction after the robot has started the round.

3.3 Inspections

3.3.1 The robot will be inspected by a panel of referees before the event to ensure that the robot adheres to all relevant rules. Robots that comply will be issued with a sticker. Once a sticker is placed on the robot it is the responsibility of teams to have their robot re-inspected if their robot is modified at any time during the event. Robots will be reinspected during semi-finals.

3.4 Violations

3.4.1 Any violations of the inspection rules will prevent the robot from competing in a round until modifications have been made to the robot to ensure compliance.

3.4.2 Modifications must be made within the time schedule of the events. Rounds will not be delayed due to late teams.

3.4.3 If a robot fails to meet all specifications (including modifications) the robot will be disqualified from that round (but not the event).

3.4.4 Should the Coordinator (or other relevant person) on the advice of the officials then uphold the view of the scrutiniser, the team may be disqualified from the event.

6 Game Play

Games will be organised into Preliminary Rounds, then a Head-to-Head Semi Final, finishing in a knock out final.

6.1 Event structure

6.1.1 A Sumo match **(3 rounds)** will be limited to a 5min round. This will be timed by the referee.

6.1.2 The game consists of a best-of-3 match system.

6.2 Official Rules

6.2.1 Referee will ask teams to place their robot on **opposing sides of the board.** The robots can face **any direction** but must be touching or overhanging the white line.

6.2.2 The referee will countdown "3, 2, 1, Sumo", on "Sumo" teams can start their programs by interacting with their control system on the robot. Robot handlers will then step back behind the boundary around Sumo Board.

6.2.3 Matches may be called over by a referee during the following conditions:

1. If a robot clearly falls from the edge of the field.
2. If a match lasts longer than a minute with no clear progression (see 6.3).
3. If a handler touches or interferes with a match. In this case a referee will determine if a restart is required or if a win will be given to the opposing team.

6.3 Lack of progress

6.3.1 A Lack of Progress occurs when any one or more of the below conditions has been reached:

1. If match lasts longer than 1 min. The referee will count down 5, 4, 3, 2, 1. On one the robots must be picked up. The moment this count is started no winner will be awarded for that match and another match will be restarted.
2. If robots are rendered immobile e.g. they are flipped onto their side or visibly have sensor related problems that will impact on the match, then a count will be started as per point 1.

6.4 Scoring

6.4.1 Teams will be awarded 1 point for each win and 0 points for a draw or a loss.

6.5 Finals

6.5.1 Teams will compete in timed rounds and scores will be allocated as per 6.4.

6.5.2 The 8 top scoring teams in both divisions primary and secondary will form a semifinal draw. The semifinal draw will be a knockout structure. This draw will continue to play until there is four robots ready for the finals.

6.5.3 The 4 teams will compete in 2 more matches. The winners of the first match will compete in the Grand Final for 1st and 2nd place, while the losers compete for 3rd place.