Cariboo Junior Skills Competition

Scope Document

Sumo Robots 2023

Thompson Rivers University
March 3, 2023

Eligibility:

This competition is open to individual competitors in grades six through ten.

The purpose of the challenge is to:
- Build, and name a mini Sumo Robot.
- Create a wheeled device that can remove an opponent out of a given area (sumo ring).

Registration:
- There is a limit of 10 competitor entries.

Note: Should space permit, additional competitors will be entered on a "first come, first served" basis. If necessary, schools should initiate a school-based run-off to see which competitor will advance to the regional competition.

Equipment, Tools, and Materials:

Supplied by the Competitors:
- Safety glasses.
- Robot and accessories.
- Extension cord, power bar.
- Tamiya Twin-Motor Gearbox.
- Miscellaneous tools required to modify and repair robots on site.
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Supplied by the Committee:
- Scale.
- Tape measure.
- Sumo ring.
- Power outlet.
- Power source to operate the robots.
- A worktable will be available for repairs during the competitions.
- Competition schedule.
- A panel of judges.

Robot Limitations and Rules

- Each robot must be clearly labelled with a name clearly visible on at least two sides.
- Each robot will be measured and weighed when it arrives. The robot must fit within a cube measuring 13 cubic centimetres. (An additional control cable support with a maximum height off the playing surface of 20cm is allowed). The robot cannot exceed a maximum weight of 500g. (The control unit and 4 to 6-foot control cable are NOT considered part of the robot for size and weight measurements).
- The robot MAY NOT be modified after it has been measured and weighed. (The robot will be measured and weighed at the end of the competition).
- A Tamiya Twin-Motor Gearbox Kit **MUST** be used. (Additional gearboxes/motors may be used to move other parts). Tamiya Twin-Motor Gearbox Kits (part #799-70097 or 799-70168) can be purchased from Borgfeldt Canada (tel: 905-946-9677, www.borgfeldt.ca) for under $10, including tax and shipping. Borgfeldt Canada accepts Visa and Purchase Orders.
- The maximum operating voltage is 6 Volts DC (4 – AA batteries).

Forbidden Items:

- Store-bought wheels or treads.
- Any device that may damage another robot.
- Liquids, powders or compressed air.
- Anything that may damage the playing surface.
- Glue, tape or suction devices.

Controller Limitations and Rules

- The competitors MUST make the housing of the controller.
- The competitors MUST make the control switches.

Forbidden items

- Commercially fabricated housings or cases.
- Purchased or salvaged switches or potentiometers.

Match Play:

- The judges will place the robots randomly into a match play.
- A round-robin will occur between robots, which will determine their respective playoff positions.

- A match will consist of 3 games.
- The winner of the match is the robot that wins two games.
- The winner of the match moves to the "A" pool. The robot that loses the match moves to the "B" pool.
- The winners of the A and B pools will then compete in a double knockout tournament-style competition.
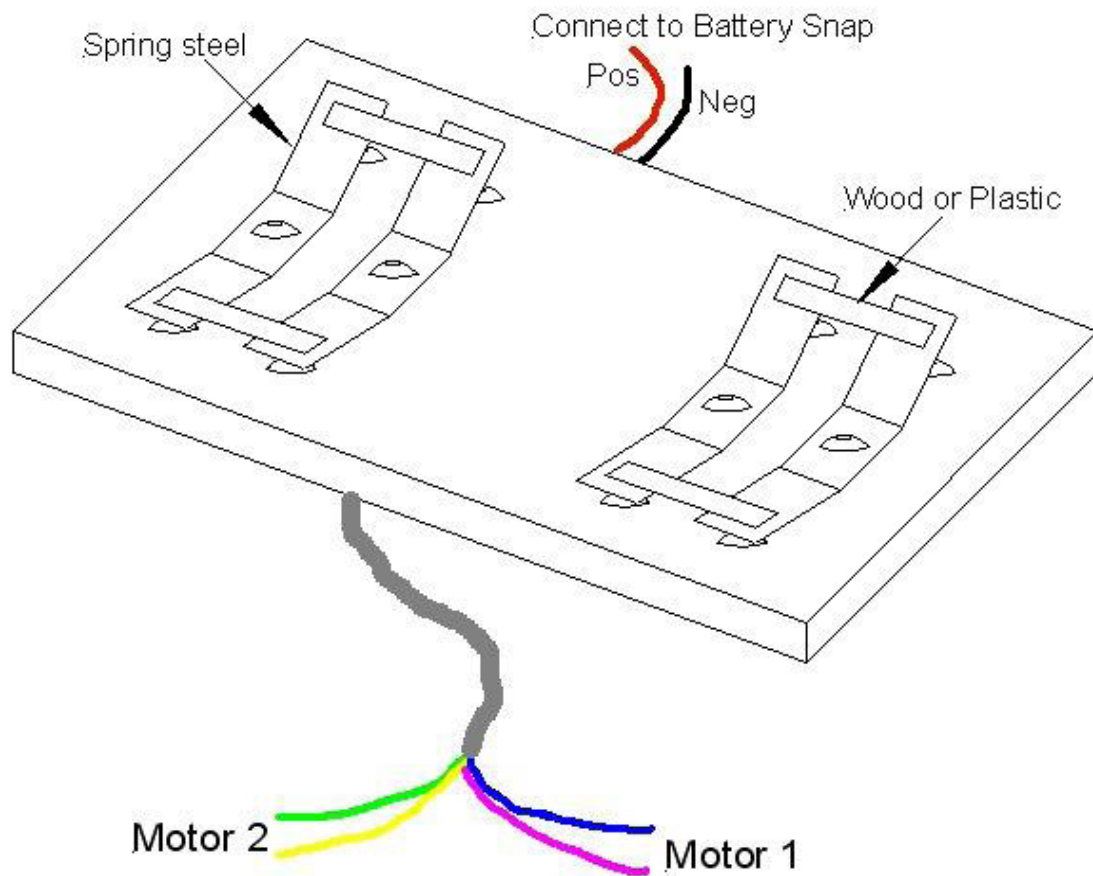
Game Play:
- A game will have a maximum time limit of 3 minutes.
- The first robot that has been removed from the playing surface is considered the loser of the game. If both robots fall off the playing surface, the loser is the first to touch the ground.
- If the control cables become tangled, the judge decides to continue play or untangle and restart.
- If two robots are facing each other, and NO movement is made for 5 seconds, then both robots must stop power, and the judge will restart the game and continue for the remaining time.
- If a robot loses power and cannot move, it forfeits the game.
- A 2-minute timeout will be granted between games to correct any repairs. After 2 minutes, the robot will forfeit the match if the repair fails.

Technical Committee:
Chair: Darren Seibel   dseibel@sd73.bc.ca

Top of a typical Controller

Each switch will control a motor in forward and reverse

Spring steel

Connect to Battery Snap

Pos | Neg

Wood or Plastic

Motor 2

Motor 1

Underside of a typical Controller

Connect to Battery Snap

Neg   Pos

Ensure there is a stain relief to prevent wiring from being pulled out

4-6ft Cable to connect to Motors

Motor 1

Motor 2