Scrapbot Challenge Rules

Adelaide Robot Combat
21/12/2023

Section 1: Art of the Scrapbot

1.1 The spirit of the class is building low-cost robots out of junk/recycled materials to fight to the death, for fun!
1.2 Scrapbots are combat robots and as such must follow an abridged version of the SPARC rules (given below). SPARC rules apply in all other instances.
ARC SPARC Robot Construction Specifications V1.06.pdf
1.3 Efforts must be made to make a robot that will damage, control or disable its opponent in some way.
1.4 All builds must have an active weapon, waggle sticks and WINOs (Weapons in name only) are allowed.
1.4.1 Bots that use their drive power to activate their weapon (such as thwackbots) may be allowed at the event organiser's discretion, provided they meet the intent of rule 1.3

Section 2: Scrapbot weight class

1.1 Scrapbots are their own class with a maximum weight limit of 200g for wheeled robots at the weigh-in. An additional 150g is given for shuffling robots and 400g for a full walker.
1.2 A robot is a shuffler if drive motors spinning in one direction make the robot move, but it does not use “wheels” instead it uses feet that remain mostly parallel to the floor. Wheels will be defined visually, anything sufficiently round will be considered a wheel.
1.3 A robot is a walker if it has motors that need to spin in 2 directions for it to take a step
1.4 The following adjusted weight limits apply for this event. Refer SPARC rules for classification of a shuffler and walker.

Rolling	Shuffler	Walker
250g	440g	N/A

1.5 After a victory robots may have parts of their defeated opponents attached to them at no weight penalty.

Section 3: Allowed parts

3.1 A set of standardised electronics are to be given to each competitor, including:

- 2 n20 gear motors
- 2 brushed escs

- 1 9v rechargeable battery
- 1 9v connector
- 1 switch
- 1 Flysky compatible receiver
- 2 LEDs with bias resistor

Additionally, all competitors will be offered an additional n20+ESC or 9g servo to run the weapon in their robot.
A 4th motor and ESC may be offered for purchase at the event, from the event organiser.

3.2 Transmitters are not included in the standard parts as competitors are expected to bring them from home, event organisers may lend or sell tx/rx pairs to competitors that don't have them.
3.2.1 Transmitters and receivers must be standard off-the-shelf components. Receivers can be 3-8 channels but must be the style that uses servo plugs to connect to components.
3.2.2 No programming outside of the standard tank drive or omni-drive mixing is allowed.
3.3 Robot chassis are to be built during the event from plastic and household junk supplied by the competitors, which is dumped into a communal pile before the start. Competitors are allowed to bring any materials they think fit this brief, including metal if it can be considered standard household junk *(for example, aluminium cans are fine, a sheet of 10mm 6061 aluminium is not*). Any material on the table is fair game to any competitor, no dibs can be called, and the provider of the material is irrelevant once the event begins.
3.4 Only the items listed in section 3.1 may be used to electrically drive/operate a robot. Supplied junk cannot be used to replace or add onto the items in section 3.1. *For example a motor out of a junk R/C car brought to the event may not be used for the weapon but wheels from junk items are permitted.*

Section 4: Size

4.1 Bots must be able to be immobilised by an arena hazard, be that a pit, OotA zone or other hazard, oversized robots may be asked to slim down before fights commence, limited time will be given for this

Section 5: Build time

5.1 Build time will be varied by event, the suggested time is 2.5 - 3 hours.
5.2 Builds are to be carried out at the event immediately before weigh-in and tournament start.

Section 6: Tournament structure and judging

6.1 The tournament will consist of 2 halves: a round-robin and a single elimination finals.
6.2 Competitors will be split into even round-robin groups and fight all competitors in their group. In this stage, 2 points will be awarded for a win, 1 for a draw and 0 for a loss.

6.3 Fights will be 3 minutes or until one robot is immobilised for 10 seconds or one robot touches an OotA zone (such as the bottom of an open pit, or the floor after being pushed over a wall).
6.3 The top 2 robots from each group will go into a single elimination tournament to determine the best robot. The winner moves on, and the loser is eliminated. If a fight ends in a draw, the winner will be determined by judges, judging based on 3 categories: Damage, Control and Aesthetics. Only one point is to be awarded for each category, so the best robot takes the category, and the robot that takes 2 categories wins the match.
6.3.1 Judges may choose to award the aesthetics category based on a crowd “cheer-o-meter”.
6.3.2 Emotional damage is valid damage, and as such “embarrassment” can be factored against a robot in this category.

Section 7: Lost parts and trophies

7.1 During a fight, if a competitor loses a component of their robot through their opponent's actions, they are encouraged to give part or all of the component as a trophy, as long as doing so will not greatly impede the robot’s performance.
For example Bot A hits Bot B hard enough that it's front scoop falls off. Bot B gives half of the scoop to be attached to Bot A as a trophy.
7.2 While emotional damage is valid damage, you may not give a robot's soul, spirit or emotions as a trophy.
7.3 Googly eyes are fair game and highly valuable trophies.

Section 8: Junk draft

8.1 To ensure junk is distributed evenly and competitors don't just use their own junk a drunk draft can be implemented.
8.2 The draft is to be performed by drawing names from 2 hats, one for inexperienced competitors and one for experienced competitors. The former group gets drawn a few at a time first. And then the latter group is drawn a few at a time.
8.3 Inexperienced competitors are defined as competitors who have never competed before, never competed with their own robot or have competed with their own robot at fewer than 3 events. Experienced competitors are competitors who do not fit the inexperienced category.
8.4 When called a competitor can grab up to 3 pieces of junk for their draft.
8.5 Once all competitors have had a chance to draft junk, all competitors are allowed access to the pile to collect any remaining junk they need for their construction.