

Robonz Tabletop Robotics Grand Championship 2012

Introduction

Robonz in Auckland will be hosting a casual robotics competition 3 times a year including a grand championship at the end of each year. The next competition is on **November 24th, Saturday 1pm**

The goal of the competition is to encourage robot building and excite engineers. It is \$5 for entrants \$10 for families and free for spectators. Open to all ages. You can enter as an individual or as a team. Please bring refreshments or biscuits on the day if you can.

This competition will be broken up into **two grades, Normal and advanced**. If you want to compete in the advanced group you can opt in. If you win with fast times then you will be forced to compete in the advanced group. This is to give newer competitors a chance to win first place without competing against the pro's right away. There will be two sets of winning placing's.

The venue will be established closer to the competition date. Make sure you are subscribed to the Robonz mailing list for a heads up.

www.robonz.com/maillist.html

Robot Requirements

- **Robot size is limited to 250 x 250mm square.** If you can fit your robot inside a standard 2 litre ice cream container, you can use it for sure.
- The robot may expand up to **300 x 300mm during operation.**
- There is no height limitation
- Anything goes within the square of the robot, but during the course of the event, everything must be contained within the 300 x 300mm square, end effectors and tethers etc.
- Robots are to be fully autonomous, i.e. no remote/radio controlled operation of the robot. Unless it is to start/stop the robot.
- Your robot may be operated from a wireless connection such as a laptop; however there is to be no interaction with the computer while the robot is operating.
- You may use any type of robot, Lego, Vex, Meccano, Scratch built. etc.
- The robot should be in the spirit of the competition; this means no projectiles or explosives.
- The same robot can be entered in all levels
- Cans must be moved by physical contact. (e.g. Not blown off with air etc)
Shooting a can at a can is ok, if you are so skilled!

Arena objects or “Cans” as they are called

To simplify things we will be using two kinds of cans. Standard Coke 355mL (red) and Coke Zero (mostly black) cans. They will be empty.

You may bring with you, cans of the same size, in the same colours and use those. If you do plan to bring your own cans you may want to get them sanctioned prior to the event. E.g. A grey paint would not suffice for black.

You may use empty tin food cans, and use the magnetic properties of those cans. Watties 290gm soup cans are of very similar dimensions to drink cans.

Competition Events

Level 1

Push 5 cans off the round table!

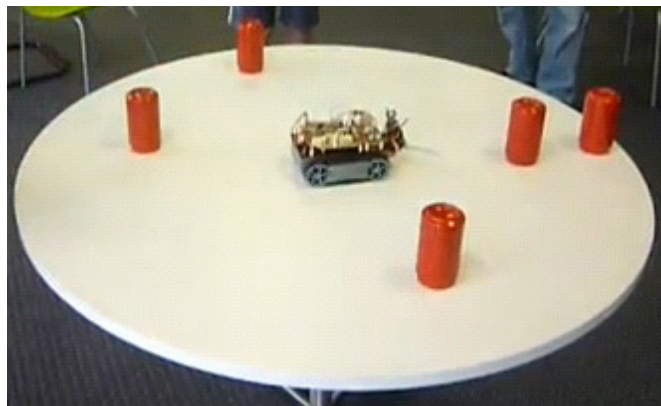
Objectives

- Push 5 empty drink cans off the table in the fastest time.

Rules

- Maximum run time 60 seconds.
- Robot starts from the centre, in any orientation you like
- The can must be physically touched, kicked or pushed off etc. E.g. blowing the cans off with air would not count. Cans knocked off by other cans is really cool.
- Cans are placed and reused in the same placement for all competitor attempts.
- Typical 355mL Coke cans (red).
- The fastest time or most cans off wins.
- The table is a 1.2m diameter round table, with a semi glossy white texture.
- Best of 3 rounds or attempts.

Example run using red cans on the actual table



Note: All spectators *MUST* be at least 1.5m away from the table, do not use flash photography while robots are running

Level 2

Push 10 cans off the “T” table!

Objectives

- Push 10 empty drink cans off the “T” table in the fastest time.

Rules

- Maximum run time 120 seconds.
- The can must be physically touched, kicked or pushed off etc. E.g. blowing the cans off with air would not count. Cans knocked off by other cans is really cool.
- Cans are placed and reused in the same placement for all competitor attempts
- 8 x standard red Coke cans, 2 x black Coke Zero cans, Tricky eh?
- Cans will be placed on the day at an agreed, but random, location.
- The starting point will be placed on the day at an agreed location.
- Robot starts in any orientation/direction you like.
- The fastest time (or most cans off wins).
- The fastest time of 3 rounds or attempts wins.
- Tables are semi-gloss white, see the image below.
- We will join two tables together to make a “T” shaped course.
- Each table is 1800mm x 800mm, see the picture for the configuration we will use.

The join will be as good as we can get it. A quick test shows a gap of less than 1.5mm. Here is a photo of the join.

The Join between the tables



The “T” Table



Note: All spectators *MUST* be at least 1.5m away from the table, do not use flash photography while robots are running

Future Plans

Level 3

“Super big table, hunt down those cans!”

Objectives

- The object of the competition is to remove 10 cans from the table in the fastest time.

Rules

- Maximum run time 2 minutes.
- This table is really big!
- Table: 1.4m x 5.6m rectangular. Mid-grey laminate surface with wood-grain effect.

Obstacles

- There will be three rigid obstacles placed on the table. They will be cubes about 350mm x 350mm x 350mm.
- Cubes will be a colour at least as light as the table surface, possibly bare MDF or a white surface. These obstacles will be placed on the long centre line of the table and are not intended to be moved (they cover cable wells set into the table)

Level 4 and beyond

“Push cans into goals. Find the right colour can!”

Additional levels have not yet been determined and will be based on your feedback and robot capability. Things that might make up future levels could possibly include the addition of a goal to sweep cans into, instead of just tipping them off the table anywhere, and the need to distinguish between different coloured cans.

Other courses may have two robots competing against each other at the same time!

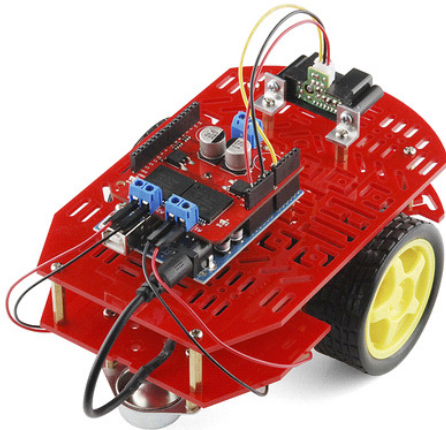
Restrictions

As this is a competition to encourage robot building, and to encourage new people into the hobby, we want to ensure that people get a chance to win a competition without always being beaten by the more experienced competitors. As a result competition levels with a sufficient number of robots may eventually have a Restricted and an Open section <-(as well as advanced and normal???. Restricted sections are not open to anyone who has won that Level. Open sections are open to all.

Getting started

If you're new to robot building from scratch, you don't necessarily need to design everything from scratch.

A good starting point is to use the [Arduino](#) platform, and use the [Magician chassis](#), both of which are available from [MindKits](#) (www.mindkits.co.nz), who also sell a variety of sensors and other accessories for you to get started with.



Lego parts can be obtained from sets in your cupboard or at the shops and individual parts can be sourced from www.bricklink.com. Meccano parts can also be obtained from sets and individual parts are available from www.meccparts.com (based in Auckland).

Remember to sign up at Robonz.com so you can ask questions and get parts you need, There are plenty of people with a good stash of parts and knowledge. Maybe you are one of those people that can help out too!

Mail list sign up is here....
www.robonz.com/maillist.html

Contact the Robonz mail list to tell us if we missed something important or you have a question. Ask for Gary, Wes or Keith.

We look forward to seeing you compete! We expect at least 10 robots in this next event!

The Robonz Team!