

shoehorning a motor normally used to drive Beetleweights (a B16 600 RPM gear motor) and running it to the hammer at a better but still unreasonable 1:1 ratio.

To test whether this setup would be feasible, I used a nine volt battery and clip leads to see if it would swing the hammer. It did; confirming that it will swing fine at 11.1 volts when I installed the tiny lithium polymer battery.

The drive motors are the same ~800 RPM motors that were

inadequate for swinging the hammer. In that context, two of them propel the bot just fine, though it will certainly never be dubbed Torque-zilla.

Because weight was at a premium, my speed control options were limited. To control the comparatively goliath weapon motor, I opted for a Beetleweight sized BotBitz 10 amp speed control, which should theoretically stand up to the rigors of being pushed to stall on almost every swing.

For drive control, Endgame

Robotics recently unveiled a DESC (dual electronic speed control) capable of mixing two brushed motors; it was crazy cheap and about the size of a postage stamp, so in the bot it went.

It drives. It swings. And most importantly, it looks like a miniature Beta, so I'm calling this personal challenge a success.

It's also proof (or so I like to think) that you don't need a lot of tools or an engineering background to build a little piece of kinetic combat art. **SV**

Why Visit Canada ...

● by Paul Grata

Most combat robot builders have probably heard of FingerTech Robotics. They are the ones who've come out with Silver Sparks and Tiny ESCs (amongst others) which are staples of the combat scene.

They've sponsored countless events and the owner, Kurtis Wanner has traveled to several events to compete with his personal bots.

What you may not know, however, is that FingerTech is based in the middle of Canada (literally) and that the Canadians have a vibrant (and vicious) combat scene waiting for foreigners to invade.

Last year, I had the (mis)fortune to be one such foreign invader.

While I've known Kurtis for years, I've always put off his invites to visit what I thought would be the cold, frozen, barren tundra of Canada.

To be perfectly honest, I didn't think that Kilobots and their Canadian National Championship would be very competitive for a guy who's been building on various scales for the past 15 years. (Did I also mention that I thought Canada was a cold, frozen, barren tundra full of sasquatch and Mounties riding moose?)

This past September, I finally relented and decided it'd be a fun



little adventure to visit this far-off land (I'm from South Florida). Plus, Kurtis promised a good time and a spot on his floor next to his fluffy Bernese mountain dogs, so I couldn't possibly say no!

I hopped on a flight and landed in perhaps the smallest airport I've ever been in, prepared to invade these frozen lands with a robot I literally built in a week's time. The Canadians wouldn't know what hit them!

With my invasion force of one, I quickly discovered I was woefully

unprepared. Not only was Saskatoon *not* a frozen wasteland in September, but everyone was also not at all prepared to merely allow me to win simply "because they were Canadian."

Apparently, I was in for a real fight, against real robots, and an arena that was much nastier than I'd thought something created north of the border could ever be.

My first shock was the lack of a frozen wasteland. While chilly for a southerner such as myself, the weather was amazingly perfect: lows



dedicated solely to their event.

I've been to several events before, and while I admit this wasn't the size of DragonCon, I was still impressed with the organization and thought put into the arena setup and pit layout.

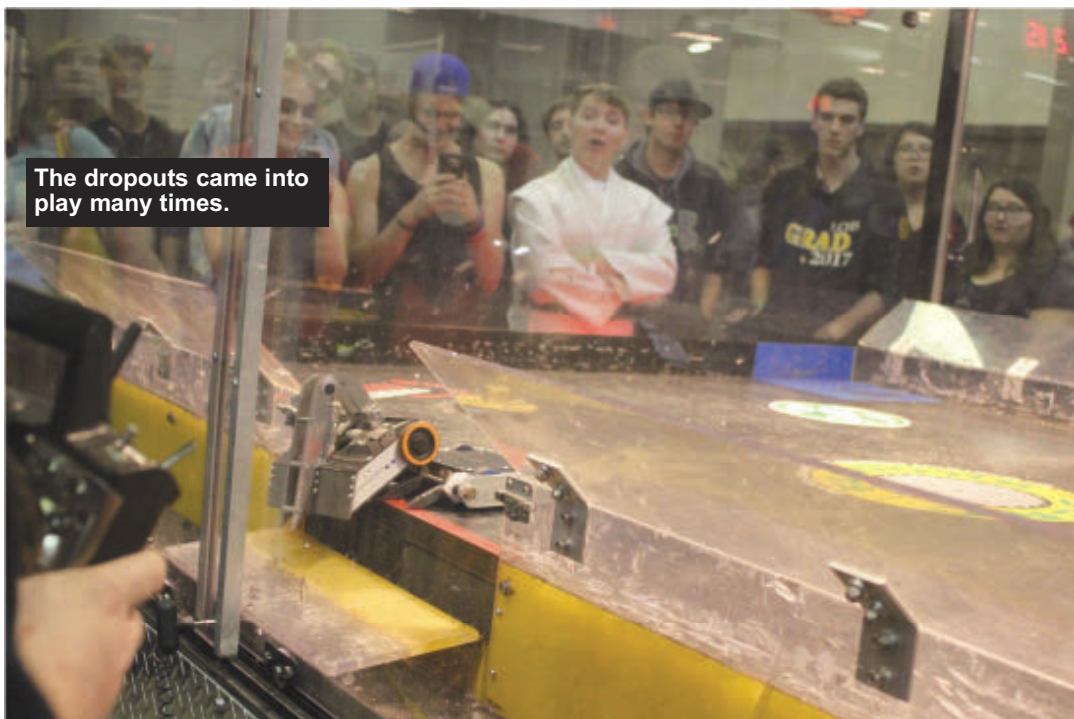
This was going to have a solid number of robots, a great audience experience, and a vicious arena to contend with.

The final shock — because there's always that third gasp — were the prizes. FingerTech was one of the sponsors of this event along with Robot Marketplace, Big Blue Saw, ServoCity, Pololu, *SERVO Magazine*, BotBitz, and Equals Zero, but the top prize for Beetles was a round trip flight donated by RoboGames to attend RoboGames.

Now that is a prize worth fighting for! (Also worth noting was a prize for what I like to call "The Worse Robot Award."

In Canadian, that translates to "The Golden Grinder Award," given to the robot that breaks the most often or most spectacularly.)

I'll admit that I didn't take great care in building my robot for the competition. I normally run with a 150g robot and anything else I get built is a



maybe touching the 40s, and a very pleasant 60s during the day.

Not a sasquatch in sight and certainly no need for that one snow jacket thing I own that never sees the light of day!

The second shock was the competition itself. When Kurtis told me this was the National

Championship, I thought it meant simply that he was the only game in town and thus could call it whatever he wanted.

I knew this was a foolish thought once I walked into the venue and realized the size of the host event (a comicon taking up their sizeable convention center), and saw the space

bonus. However, Kilobots was only running Ants (1 lbers) and Beetles (3 lbers).

I decided my best course of action was to convert a retired 150g design into an Ant and have fun with it. How often do you get to travel to the middle of Canada and hang out with other roboteers, after all?

Plus, it was a really easy design which essentially consisted of four-wheel drive and a direct mounted drum.

I didn't have much of a chance to talk to the other builders prior to the competition starting, but once things were rolling I was able to mingle and found everyone to be incredibly nice. That shouldn't have surprised me. However, the freedom with which they offered me help while also contributing to running the event and running their own robots did.

It isn't often that you find an event which has dedicated people taking care of every aspect of it (safety, announcing, brackets, arena maintenance, etc.) while also fighting their own robots!

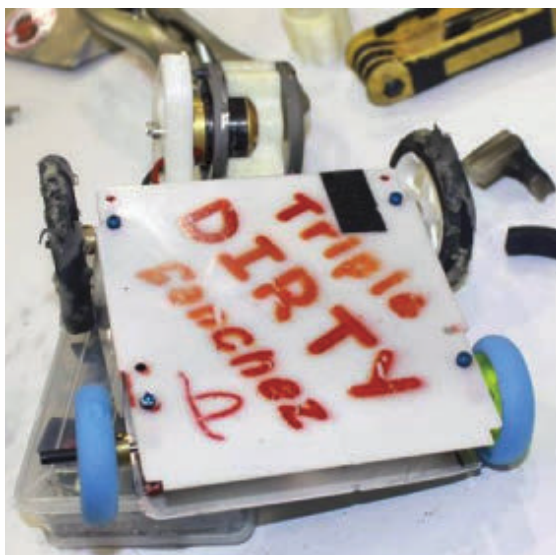
I mentioned before that the competition was vicious. This may be an understatement. The robots I encountered (and many more I didn't fight) constituted by far some of the best competition I've seen at a single event.

There were multiple roofers (my personal term for robots hitting the roof), as well as several ejections from the inner arena (the beauty of this particular arena was that two sides had knock-outs and each driver had the option of opening the door on their side; this didn't stop some robots from flying over the barrier).

The arena hazards — which consisted of sprockets with knockers welded to them — took out several other robots (and were subsequently taken out themselves), including my wheels and weapon on multiple occasions.

It was like the last grasp of summer before the long cold winter settles in and all the competitors knew it. Everything was left in the arena and everyone went for broke.

My robot somehow managed to squeak together a 4-2 record after losing my first match and wandering through the loser's bracket. Along the way, I lost all my wheels and two weapon assemblies.



My 1 lb robot, thrown together in a week.

Given all the carnage and the fact that I kept the little guy going, I was awarded the Golden Grinder Award, which is taken very seriously and is an immense honor to receive!

I celebrated my victory at the traditional builder's dinner over adult milkshakes and good food (including poutine, which was surprisingly good considering I still have no idea what it is), and amongst new friends eager for me to return to defend my grinder award.

Apparently, my robot wasn't challenging enough for them, so this September (17th-18th) I intend to bring something considerably tougher to beat.

My name on their Stanley Cup-esque trophy will look very nice amongst the former Kilobots



Me graciously accepting the Golden Grinder Award.



That big one will be mine this year!

Cup winners (*wink*). **SV**

