

« [ROBOTS AND COCKTAILS AND HIJINKS OH MY](#)

[BotLight On: Marco Antonio Meggiolaro, RioBotz](#)

February 10th, 2010 by [Intern](#)



Greetings, humanoids, robots, and humanoid robots. My name is G[REDACTED]io... I... I mean Intern. They call me Intern. At least I think they do. They starve me. The hunger does silly things to your memory. Anywho, I'm here to provide you with awesome interviews and coverage for RoboGames 2010 and beyond, starting with a BotLight On Marco Antonio Meggiolaro of RioBotz.

<- AKA that guy.

Marco has well over a decade of hands-on robotics experience, and has been involved in ComBots since 2003. He graciously offered his time and insight on ComBots, teamwork, and how to avoid pummeling random passersby with 120lb steel cylinders from 100 yards away! See our exclusive interview with the founder of the RioBotz robotics team below!

Intern: Thanks for taking the time to talk about RioBotz 😊

Marco: You're welcome.

Intern: If you would, let's start with a quick history of RioBotz- who are you guys? Where are you from? What do you do?

Marco: I'm a professor from the Pontifical Catholic University from Rio de Janeiro, Brazil. I coordinate our team of about 20 undergraduate students building ComBots, sumo bots, and hockey bots.

Intern: How long have you been involved in robotics, and how did you start?

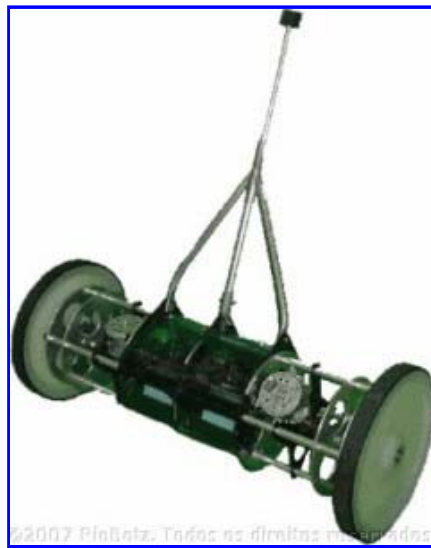
Marco: My first hands-on robotics training was at 1996, during my Ph.D. at MIT. But only manipulators and peaceful rovers, none of the combat stuff. I finished my Ph.D. in 2000, when I became a professor back in Brazil. In 2003 a group of 5 students talked to me about combat robotics, and I was hooked. We build our first ComBot in 2003, a middleweight named Lactraia. We've learned a lot since then, building ComBots is very different than building regular robots that don't have to take such kind of punishment.

Intern: Very cool. What kind of research did you do initially when you decided to get into robot combat, before building Lactraia?

Marco: In the US, I used to work with manipulator control for nuclear power plants, and had a lot of contact with prototypes for Mars rovers. In Brazil, I was working back then building inspection mobile robots (also for nuclear power plants) and with manipulator control for subsea interventions for the oil industry. We learned a lot from building Lactraia, we've realized that while the control part is relatively simple, the mechanics and electronics are much more challenging. In 2004 we built another robot, Ciclone, a horizontal bar spinner (Lactraia was an overhead thwackbot).

Intern: What was Lactraia's design, and how have your ideas about good ComBot design changed since then?

Marco: Lactraia was very weak for today's standards. Its 1mm thick aluminum armor was a joke, but it was all weight we had left after using standard (meaning heavy) industrial parts. Then we've learned a lot about high-end motors, gearboxes, batteries, which helped to create Ciclone in 2004, later Titan (also bar spinner) in 2005, and Touro (drumbot) in 2006. This also helped me with my other research and industry projects, building tougher robots.



Lacraia, with its delicious, thin aluminum armor!

Intern: Nice. How has RioBotz as a team developed since 2003?

Marco: In 2003 we didn't have any funding, so Lacraia was built with inexpensive parts. We got 6th place in the Brazilian nationals in 2003. Then the university started to help with some funding, the number of students grew from 5 to maybe 12, and we've built Ciclone. Ciclone was the Brazilian champion in 2004, and later in 2005. This helped us getting a sponsorship from an oil-related company, and then building Touro. Touro and our 60 pounder Touro Light got gold at RoboGames 2007, this was great for media exposure in Brazil. Currently we're out of sponsors, but still looking. The university helps a lot, and I contribute quite a bit, myself for this passion. We've built ComBots in all combat categories, except super-heavyweight.

Intern: So now the big question: Who gets to drive your 'bots?

Marco: Until 2006, we had a very good driver named Felipe. After he finished his Masters and left the university we found a new one, Daniel. Daniel's debut driving ComBots was at RoboGames 2007, when he won 2 golds! I think he's played too much videogames to be able to learn so fast.

Intern: On that note, how do your drivers prepare for events?

Marco: We've bought several large steel plates, that we tile on campus to be able to drive the bots without causing damage. Training is basically driving with the weapon off, driving with the weapon on (it's very different due to the gyro effect) and weapon tests. Most of these tests need to be done after midnight, when the university is empty. There's not a lot of space on the steel plates, which helps to learn how to maneuver. For weapon tests, we use a 40lb aluminum block and a 120lb steel cyclinder as sparrings to take the punishment from Touro's drum.

Intern: Have you ever been surprised by the power of one of the bots?

Marco: All the time. Ciclone's first test was on the university's parking lot, and nobody was prepared for that. There were monitor pieces all over. Last year, when we started using a single tooth drum in Touro, we were also surprised. In one of the hits, the 40lb aluminum block was thrown about 100 yards, it landed on the other side of a small river that divides the campus.



Touro – Some say RioBotz are nuts. We say they're bolts.

Intern: Wow! What do you do to ensure that nobody gets hurt when testing?

Marco: This is always after midnight, and a few students go to all possible entrances to the test site, to make sure nobody passes by. We don't have an arena, so the other students just move away and cover, using goggles. The main problem is that students start to get confident with the robot and start becoming wreckless, I have to shout all the time for them to get really away from the bot.

Intern: So that being said, what's coming next for RioBotz? Will we be seeing you at the 2010 International RoboGames?

Marco: Yes, for sure. We'll bring bots to compete in all combat categories, except super heavy and auton-ant. We'll also bring our R/C and auton 3kg sumo bots, and it will be the international debut of our robot hockey team. We're currently rebuilding all Touro bots from 12lb to 120lb (Touro Jr, Touro Feather, Touro Light and Touro). Touro's chassis was basically the same as the one that competed at RoboGames 2006, so we had to upgrade it to face the tougher and tougher competition. They'll still be drumbots, but now we're trying a new design for the structure, to help them get stronger, easier to maintain during pitstops, and hopefully having a smaller chance of getting stuck in the arena. I'm proud to announce that last week, Touro became the first ComBot to be commanded by thought! A masters student whom I advise has developed a very compact brain computer interface which can command Touro (or other bot) to move around just by reading electrodes from a cap he wears. He's achieved great results, with only 1% errors. We'll present it at the IEEE ICRA conference in Alaska in May, including nice videos from "Psychic Touro!"

Intern: Very cool! Do you think we'll see Daniel driving around Touro in combat with electrodes in his cap one day?

Marco: It is possible. But probably it wouldn't work out well, his hands can maneuver much faster than the brain interface. Besides, if some beautiful girl would pass by Daniel, Touro would get out of control with the resulting thoughts!:-)

Intern: We're looking forward to seeing you at RoboGames 2010! Thanks again for offering your time and expertise- do you have any parting words of advice for future robot builders out there?

Marco: Yes, research a lot. Read all available books, search for websites with build reports, and study the design of successful bots. Try to always question "why was it done that way?" and try to adapt the positive points to your own design. You'll save years of broken parts and bots if you spend a few months studying other bots.



Marco (center) among the RioBotz at RoboGames!

This entry was posted on Wednesday, February 10th, 2010 at 11:10 pm and is filed under [Cool Robot of the Week](#), [Neat Stuff](#), [Robot Combat](#), [Robot Games](#). You can follow any responses to this entry through the [RSS 2.0](#) feed. You can [leave a response](#), or [trackback](#) from your own site.

One Response to "BotLight On: Marco Antonio Meggiolaro, RioBotz"

1. [SB](#) Says:

[February 10th, 2010 at 11:29 pm](#)

Why, Intern, my love, of *course* we don't STARVE you, you silly boy! We *love* you! Love love love love love, that's all we are up in here for our Intern. (what did I tell you, keep talking like that in public and we'll send you back to the Hole).

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