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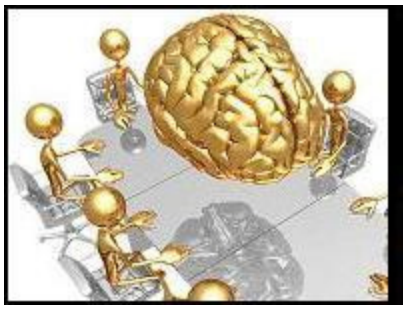

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Robot Soccer Keeps Getting Better – RoboCup

2010 in Singapore (video)

9 Comments

August 2nd, 2010 by **Aaron Saenz**
Filed under 5, robots.

"The ultimate goal of the RoboCup project is by 2050, develop a team of fully autonomous humanoid robots that can win against the human world champion team in soccer. "—RoboCup2010.org

Bots gathered in Singapore last month to test their soccer skills in RoboCup 2010.

With all the excitement surrounding this year's World Cup, another important soccer competition didn't receive the attention it rightfully deserves. Last month saw the return of RoboCup! This annual conference allows robots from all over the world compete to see who is the best on the soccer pitch. There are leagues for bots of all different shapes and sizes from tiny swarms on wheels to humanoid bipeds lumbering after the ball. While these bots can't bend it like Beckham yet, they are getting better. This was the first year with adult-sized robots squaring off on the field. Competition organizers aim to have their automated teams capable of defeating the best human players by 2050. That's an ambitious goal. We've got some great videos and pictures for you after the break.

RoboCup chose to use soccer as the basis of their competition because it's a fun sport that developers could rally behind, but also because the skills inherent to the game can be applied in many other areas. Every robot on the field is autonomous, working from a program to handle the different possible situations on the field. Finding an object (the ball), moving towards it, and carefully manipulating it towards a destination (the goal) is a software routine that has applications in everything from industry to space exploration. In fact, RoboCup has expanded in recent years to include competition in areas like household robotics, education, and rescue. Eventually the skills that teams develop for the soccer pitch are going to allow them to build robots that can work in a variety of fields. In the meantime, the robot footballers are a lot of fun to watch.

Here's a great overview of RoboCup 2010 in Singapore from IEEE Spectrum:

In the RoboRescue competition, scale sized courses are designed to simulate real-world environments. Robots compete to see who can retrieve victims and bring them to safety as quickly as possible without further injury. Barrels are used to represent humans. Is that insulting? Not sure. But I do hope that when a rescue robot comes to save me from a burning building it doesn't confuse me with a trash can.

If you were wondering what an actual full-length robot soccer game looks like, here's the final match in the kid-sized humanoid competition. Last years champions, the Darmstadt Dribblers, defeated the FUmanoids (both are German teams).

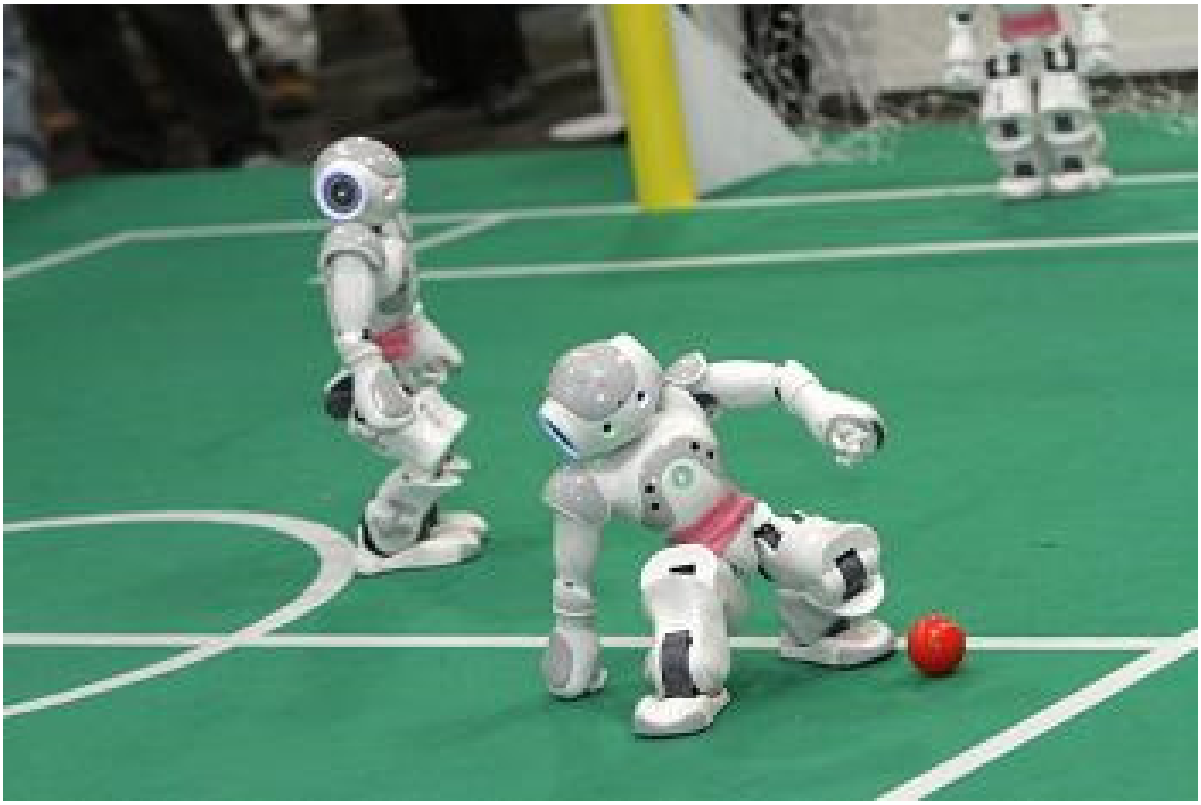
As you can see, bipedal robot soccer games are much like human games – long periods of tedium punctuated by moments of great excitement. Some humanoid bots can perform daring dives to block a shot, or mid-field kicks that score, but most of their competition involves long periods of time where robots take tiny steps towards the ball. As we've seen with other robots, bipedal motion is still a very difficult challenge in its own right. Getting bipedal bots to play ball without falling over is an accomplishment.

If you want a much faster game, check out the small-sized league finals. Wheeled bots compete with fast reflexes and interesting cooperative strategies.

RoboCup may be one of the biggest competitions of its kind, but it's far from alone. As we've discussed before, there are dozens of robot soccer competitions all around the world. While none of these events has revealed a team of robots that could go head to head with humans, progress is being made. This is the first year that full grown (adult-sized) bipedal robots competed in RoboCup soccer. Strategies in the virtual, standardized, and wheeled leagues are getting more impressive. Looking at the growing worldwide interest in robot soccer, and the progress that's already been made, it's easy to believe that we will one day have bots that put human players to shame on the field.

The only question is when…is 2050 a good estimate? Developers are dividing the problem into different parts. Standardized bots like the Nao allow programmers to really concentrate on soccer software while other teams keep innovating and expanding the capabilities of the hardware. We could have robots capable of human-like feats in the next few decades. But at that point, soccer really becomes a side issue. Once a robot can walk and talk like us, we're going to be much more interested in it rescuing victims from disasters, helping the elderly in their homes, and other useful applications. So enjoy RoboCup soccer while you can. By the time the bots get really good, they'll be seeking other lines of work.

This year saw the beginning of the adult-sized league. These humanoid bots were pretty slow, and there were only about half a dozen teams. Eh...it's a start.



Always a favorite, Nao robots compete in the standardized leagues. Every robot is off-the-shelf, but their programming is anything from ordinary.

You can find more great pics from RoboCup 2010 in the organization's photo gallery.

[image credits: Virginia Tech, RoboCup.org]
[video credits: IEEE Spectrum, BotSportTV, Pan JMP, CheekyMartz]
[source: RoboCup2010]

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Tags: Darmstadt Dribblers, FUmanoids, humanoid robots, robocup, robocup 2010, robot football, robot rescue, robot soccer, singapore

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9 Responses to "Robot Soccer Keeps Getting Better – RoboCup 2010 in Singapore (video)"

1.  *Evology Now* says:
August 2, 2010 at 7:32 pm

I can't get past how cute those Nao robots are.

Reply

2.  *Daryl* says:
August 2, 2010 at 10:48 pm

I've always thought the 2050 estimate was WAY too conservative. It's just a product of linear thinking (along with gems like "we won't have automated cars in my lifetime" or "there's no way cancer will be cured this century"). Come on everyone — look at progress being made in computer vision, navigation algorithms, sensors, actuators, battery technology etc. Now extrapolate all that along an exponential curve.

My prediction is that robot soccer players will beat the (unenhanced) human champions in 2022.

Reply

3. *Robots Suck at Soccer (Finals) | iasRobot* says:
August 3, 2010 at 3:11 am

[...] Text from Singularity Hub [...]

Reply

4.  *KronosDeret* says:
August 3, 2010 at 4:23 am

I also think around 2020 the full sized humanoid team will at least have equal match with human unenhanced team.

Reply

5. *Mike* says:
August 3, 2010 at 7:04 am

   Yep, around 2020 for me as well.

   Reply

6. *Daryl* says:
August 3, 2010 at 11:53 am

   I chose 2022 because there won't be a World Cup in 2020. That's the premise of the original prediction — that in 2050, the bots will beat the human World Cup champions.

   Reply

7. *Des robots footballeurs prêt à prendre la relève en cas de grève. | WebDevOnLinux* says:
August 5, 2010 at 8:56 am

   [...] tenu à Singapour est là pour le prouver. Peut être que ceux la ne feront pas grève!Source : singularityhub.com [...]

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8. *Cute Video of Nao Registering Itself at RoboCup | Singularity Hub* says:
August 29, 2010 at 1:11 pm

   [...] aren't just copying human athletes, they're copying human sportsmanship. At RoboCup 2010 in Singapore, a Nao robot was programmed to register itself for the competition. The robot was able to enter a [...]

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9. *Cute Video of Nao Registering Itself at RoboCup « Sameh Galal's Blog* says:
August 31, 2010 at 5:39 am

   [...] aren't just copying human athletes, they're copying human sportsmanship. At RoboCup 2010 in Singapore, a Nao robot was programmed to register itself for the competition. The robot was able to enter a [...]

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