



KUKA ROBOTICS, PREMIER SPONSOR

## ROBOCUP 2007 ATLANTA MEDIA RELATIONS COVERAGE SUMMARY

### Executive Summary

As one of the world's largest and most renowned robotics competitions, RoboCup 2007 Atlanta presented an extraordinary opportunity to generate local, national and international media coverage for the Georgia Institute of Technology as the host and main sponsor of the event, the major sponsors, and the RoboCup Federation.

In response to this opportunity, the Georgia Tech/RoboCup PR team (GCI, ICPA and CoC) implemented an aggressive and targeted media relations strategy aimed at generating 1) national and international coverage of the event, 2) interviews with Georgia Tech's event leaders, sponsors, and robotics experts, and 3) visibility of Georgia Tech robotics leadership messages in high-profile media outlets.

In terms of media coverage, RoboCup 2007 Atlanta was an outstanding success! To date, RoboCup/Georgia Tech media relations efforts garnered **more than 110 unique broadcast, print and online hits**, resulting in a grand total of **more than 450 hits** in news outlets across the country and around the world.

From a top-tier perspective, **ten major placements in national and international print and broadcast outlets** were generated around RoboCup, all of which included interviews, mentions and/or messages for Georgia Tech, Atlanta, and our sponsors. Most notable successes included:

- **CNN's live reporting** from the RoboCup finals (including an interview with Georgia Tech professor Tucker Balch), which aired on Saturday, July 7 and Sunday, July 8 across all three CNN networks – CNN, CNN Headline News, CNN International, as well as a CNN.com posting that remains active
- **Online photo essays with TIME.com and ABCNews.com**, the latter including an article and video package featuring interviews with Tucker Balch and imagery provided by Georgia Tech. Both online photo essays remain active.
- **Associated Press article** on the debut of the nanogram demonstrations, which was posted on more than 100 news sites, including USA Today.com, FOXnews.com, forbes.com, and other web sites of major dailies across North America
- **Chronicle of Higher Education pre-event article** on Tuesday, July 3 and pending photo package in upcoming issue
- **International broadcast stations NBC/Telemundo and Univision** airing Georgia Tech video packages, in addition to event coverage by Thai, Germany, Spanish and Czech outlets
- Secured national broadcast opportunities with **ABC's Good Morning America and Reuters Television**, which had to be released due to logistics and scheduling issues

- Additional coverage anticipated on **National Public Radio (NPR), COMCAST Sports and ESPN.**

Locally, three of the top Atlanta broadcast networks – **WAGA (Fox 5), WXIA (11Alive NBC) and WGCL (CBS46)** – attended the RoboCup event and aired footage during morning and primetime newscasts on Tuesday, July 3 and Thursday, July 5 and included. In particular, WAGA’s Good Day Atlanta morning show aired eight live shots from RoboCup on July 3, featuring interviews with Georgia Tech professor Charles Isbell and students from the Georgia Tech Heavy Metal and RoboJackets teams. Both major Atlanta print outlets – *Atlanta Journal-Constitution* and *Atlanta Business Chronicle* – ran articles leading up to and during the event.

Finally, top technology-focused trade print, broadcast and online outlets – *Computerworld*, *EE Times*, **G4 Television network, engadget.com and C-NET.com** – generated coverage before, during and after the event, several of which included interviews with Tucker Balch and or robotic leadership messages.

The following pages include a coverage matrix of all hits generated by the RoboCup/Georgia Tech PR team’s media relations efforts. Reprints of articles and transcripts from significant outlets that covered RoboCup (particularly those including mention of Georgia Tech) are included in this report as well.

While some foreign media coverage is included in this report, the addendum is a full clippings report of non-English based International media coverage, as reported by RoboCup PR.

Finally, a compilation DVD of all major broadcast coverage is also included. We hope that this report and media DVD serve as a great souvenir of the incredibly fun, exciting and successful RoboCup event!

- Your GCI Team

## Coverage Matrix

Unique Hits			
Top Tier			
Date	Title	Publication	Author
3/19/2007	What's Next: RoboCup 2007	Time Magazine	Staff
5/25/2007	The Robots Are Coming	Atlanta Business Chronicle	Justin Rubner
6/20/2007	Tech Bytes	ABC National News Feed	Ryan Owen
7/3/2007	Good Day Atlanta	WAGA (FOX)	Jeff Hill
7/3/2007	4:00 News	WGCL (CBS)	Staff
7/3/2007	RoboCup Tests University Mettle	Chronicle of Higher Education	Josh Fischman
7/5/2007	Wes Side Story	WXIA (NBC)	Wes Sarginson
7/5/2007	Machines Compete in Robotic Soccer Game, Flash Drives Pack Powerful Photo Punch	ABC World News	Brittany McCandless
7/5/2007	Wes Side: Robots Playing Soccer	WXIA-TV	Wes Sarginson
7/6/2007	RoboCup Kicks Off in Atlanta	ABC World News	Brittany McCandless
7/6/2007	Teams play with nuts and bolts of robotics	Atlanta Journal-Constitution	Kavita Pillai
7/7/2007	Miniature Robots Play Nano-Soccer	Associated Press	Greg Bluestein
7/7/2007	CNN Newsroom	CNN	Bonnie Schneider
7/7/2007	Headline News	CNN	Bonnie Schneider
7/8/2007	6:00PM News	WXIA (NBC)	Staff
7/9/2007	Robots Start Your Engines	WABE	
7/9/2007	Neal Boortz	WSB Radio	Neal Boortz
7/11/2007	Despierta América	Univision	Staff
7/12/2007	The Best of RoboCup 2007	TIME.com	Rob Felt
7/12/2007	Robots Attack Atlanta	Creative Loafing	Andisheh Nourae
7/14/2007 or 7/15/2007	Nitido	Telemundo	Saba Mendes
Other			
4/26/2007	Artificial intelligence competes in Istanbul	Turkish Daily News	Cetin Cem Yilmaz
4/28/2007	Team Osaka shows off RoboCup entrants	Engadget.com*	Donald Melanson
5/1/2007	Big Battle for Mini-Robot	Times 24	Staff
5/9/2007	Atlanta gets ready for RoboCup 2007	EarthTimes.org	Science News Editor
5/9/2007	Pupils bring robot creations to life	South East Advertiser	Staff

5/9/2007	Atlanta gets ready for RoboCup 2007	United Press International (UPI)	Staff
5/10/2007	Cyberpuppies looking to kick new goals	Australian Associated Press	Staff
5/10/2007	RoboCup Workshop	The Echo	Staff
5/17/2007	One day, robots will play in the FA Cup final...	Tech Digest	Stuart Dredge
5/17/2007	Roving Robots	The Newcastle Herald	Staff
5/21/2007	Grindergirl keeps geeks on the top: Robo-dogs on the ball	Computerworld	Staff
5/27/2007	Preparan a robots para ser campeones	Palabra	Staff
6/2/2007	Robots to play soccer	Hinduonnet.com*	Staff
6/7/2007	Got your tickets for robocup 2007 yet?	Huffington News*	James Geary
6/20/2007	Georgia Tech Hosts Robo Cup	13 WMAZ	Staff
6/13/2007	Amining to bend it like robo	South East Advertiser	Staff
6/18/2007	300 Teams Gather for RoboCup 2007	Azom.com*	Staff
6/25/2007	University of California merced team will compete in international rescue robot contest	US Fed News	Staff
6/25/2007	Programming a robot for RoboCup is child's play	Daily Telegraph	Staff
6/25/2007	Spellman to compete at Robo Cup	Newswise	Staff
6/27/2007	America does not give visa to members of Iranian RoboCup team	BBC	Staff
6/28/2007	Robo-boys' cup bid	Hornsby and Upper North Shore Advocate	Staff
6/28/2007	District News South	Liverpool Echo	R. Colin Johnson
6/29/2007	Just for kicks, RoboCup expands to include nanobots	EE Times	R. Colin Johnson
6/29/2007	Escola Profissional envia grupo a Mundial robos	Journal De Noticias (Portugal)	Staff
7/2/2007	IPFW in on global robotic soccer quest	The News-Sentinel	Jessica Carlyle
7/2/2007	Dust Mite-Sized Soccer Debuts July 7-8 at RoboCup in Atlanta	US Fed News	Staff
7/3/2007	RoboCup 2007 underway in Atlanta	gizmag.com	Staff
7/3/2007	RoboCup 2007 Opens at Georgia Tech	Slashdot*	"Craig"
7/4/2007	2007 RoboCup underway in Atlanta	Neoseeker	Kevin Spiess
7/4/2007	Contestants power up for RoboCup 2007	vnunet.com	Ian Thomson
7/5/2007	Bend it like...nanobot?	Vancouver Sun	Nicholas Read
7/6/2007	First success for Graz TU robot team	Austria Today	Staff
7/6/2007	Linux Robots Descend on Atlanta; At Atlanta's Robocup competition, Linux-based designs aim to replace Sony's AIBO	PC Magazine	Henry Kingman
7/6/2007	Entering a Byte-Sizes Robot Contest Naval Academy Team the Only Undergraduates in Ga. Tournament	The Baltimore Sun	Bradley Olson
7/6/2007	RoboCup Draws Teams from Aournd World to Atlanta	WRAL.com (NC)	Staff
7/6/2007	Robo Ronaldo scores midfield RoboCup goal	Engadget.com*	Darren Murph
7/7/2007	Three Thai teams make finals in US	Nation Multimedia (Thailand)	Staff

7/7/2007	Stateside students activate machines for Robo-cup	Lancashire Evening Post	Staff
7/7/2007	RoboCup-WM: Brainstormers und Nimbro sind Weltmeister	Heise Online	Staff
7/9/2007	Universität Osnabrück holte zwei Weltmeistertitel bei der RoboCup WM in Atlanta	Computerzeitung.de (Czechoslovakia)	Staff
7/9/2007	Roboterfußball ist Testfeld für verteilte Systeme	Cnet News.com*	Staff
7/9/2007	World Cup for robots kicks off	Daily Mail (UK)	Niall Firth
7/9/2007	RoboCup 2007 Wraps up	Dr. Dobb's Portal*	Jon Erickson
7/9/2007	Microscopic robots get their game on at RoboCup	engadget*	Staff
7/9/2007	RoboCup 2007 Concludes, Germans Dominate Robot Soccer Matches	Gizmodo.com (Hungary)*	Staff
7/9/2007	Thai team; Independent, wins RoboCup 2007 in US	Nation Multimedia (Thailand)	Staff
7/9/2007	Top place for Iran RoboCup team in US	PRESS TV (Iran)	Staff
7/9/2007	The Feed	G4Tech TV	Staff
7/10/2007	Fotbalovy mistrak robotu	Lidovky.cz (Czechoslovakia)	Staff
7/10/2007	RoboCup 2007: Winners roundup	Engadget.com*	Joshua Topolsky
7/10/2007	RoboCup footage roundup	Engadget.com*	Donald Melanson
7/11/2007	Robot Soccer: The Future of Sport	AOL SPORTS*	
7/11/2007	Thai team wins World RoboCup Rescue Championships in US for the second time	Thai News Service	Staff
7/11/2007	Erstes Fussballspiel im Nano-Bereich	ST. Galler Tagblatt (Germany)	Staff
7/11/2007	Thailand wins top prizes of World RoboCup 2007	Thai News Service	Staff
7/11/2007	Robot to the rescue again	The Nation (Thailand)	Staff
7/11/2007	Thai rescue robot wins again	Bangkok Post (Thailand)	
7/11/2007	RoboCup 2007: As Good As The Real Thing	OhGizmo! (Canada)*	Evan Ackerman
7/12/2007	Kind Mongkut's Institute team wins international robotics competition	Thai News Service	Staff

## Print and Online Articles



### **Atlanta gets ready for RoboCup 2007**

Staff

United Press International

May 9, 2007

ATLANTA, May 9 (UPI) -- Georgia Tech will be the site of this year's RoboCup competition, with approximately 2,000 students and faculty from 20 nations participating.

The world competition for research robotics, RoboCup 2007 Atlanta will be held on the Georgia Institute of Technology campus July 3-10. Events will range from four-legged and humanoid robotic soccer games to search-and-rescue competitions.

This year's event includes the debut of the Nanogram League, a competition between microscopic robots.

In addition to RoboCup 2007 Atlanta, Georgia Tech will also host several other robotics-related events, including the Robotics: Science and Systems conference and an International Aerial Robotics Competition.

RoboCup is an international research and education initiative designed to foster artificial intelligence and robotics research.



**The robots are coming**

Justin Rubner

*Atlanta Business Chronicle*

May 25, 2007

RoboCup is coming to town.

The event, which features autonomous robots playing soccer and performing search-and-rescue missions, will be held at Georgia Tech from July 3 to 10. Two thousand student engineers from leading universities and high schools from more than 20 countries will compete. The goal of the competition is to spark interest in robotics research.

RoboCup is sponsored by KUKA Robotics Corp., one of the leading manufacturers of industrial robots.

In years past, RoboCup has been held all over the world, including Nagoya, Japan, and Paris.



## **Just for kicks, RoboCup expands to include nanobots**

R. Colin Johnson

*EE Times*

June 29, 2007

PORTLAND, Ore. — Like many professional sports leagues, robot soccer is expanding this year. RoboCup 2007, which starts Sunday (July 1) and runs through July 10 in Atlanta, will host 1,700 robot researchers and 300 robot teams from 33 countries. They will compete in robot soccer, search-and-rescue missions and for the Louis Vuitton Humanoid Cup. For the first time, MEMS-sized robots will compete in their own league.

RoboCup 2007 will be hosted for the first time at Georgia Tech, which is seeking to field a full team of robot soccer players. The organizers have set 2050 as the date for a human-versus-humanoid soccer match, said Tucker Balch, chairman of the 2007 conference and a professor at Georgia Tech's College of Computing.

Robots "are just starting to look like people instead of machines," said Balch. "They still move a little bit slowly, but [what] you connect with is the way their eyes fix on the ball, and the way they use their arms for balance."

As humanoid robot software improves, Robocup will eventually expand from four-on-four to 11-on-11 humanoid robot soccer matches. "It's software that is making the most important differences in robot behavior," Balch said. "Many of the teams will play much better this year even though they are using almost exactly the same hardware they used last year."

### **Nanobots**

RoboCup 2007 will feature a new Nanogram League in which microscopic robots will compete. Nanobots will be guided by external controllers. Most entrants will use external microcontrollers and wireless communications to control electrostatic actuators.

At least one entrant is using a magnetic coupling to remotely actuate nanobots. "We are using a micro-milling laser with a spot size of two or three microns, enabling us to cut out robotic shapes from magnets to manipulate the tiny soccer balls," said doctoral candidate Steven Floyd of Carnegie Mellon University. "We thought most teams would use electrostatic actuators, so we decided to do something different."

The soccer balls are actually silicon nitride disks with three divots that lift them off the surface to decrease friction. Teams will view the arena through an optical microscope and use off-board electronics and visual feedback to control robots.

### **Search and rescue**

Small robots are particularly useful for rescue operations since they can fit into small spaces humans can't. Autonomous rescue robots require mobility, sensor perception, route planning and map reading to find disaster victims.



During RoboCup, rescue robots will navigate a simulated disaster site the size of an apartment. Robots will be timed during a competition to determine how long it takes to find victims, identify survivors and transmit back a map that human rescuers could use to locate the victims.

# THE CHRONICLE OF HIGHER EDUCATION

## *The Wired Campus*

Education-technology news from around the Web

### **RoboCup Tests University Mettle**

Josh Fischman

*The Chronicle of Higher Education Online*

July 3, 2007

Today the 2007 RoboCup challenge kicks off in Atlanta. About 1700 students and faculty members from leading universities all the way down to elementary schools will compete in the robot competition, pitting new robotic creations against one another in four-legged and two-legged soccer competition, as well as search-and-rescue races and other tests.

The competition, held at the Georgia Institute of Technology through July 10, aims to inspire students to push the envelope in robotics research. It's also intended to make robotics and computer science more appealing to a wider number of students. Finally, RoboCup plans to field a team of soccer-playing robots against a human team by 2050.

One team that's getting early attention is the SpelBots of Spelman College, a historically black women's institution in Atlanta. In 2005 the SpelBots made history (RoboCup history, at least) when it became the first all-black, all-female undergraduate team to qualify for the four-legged soccer competition. In 2007, with more tournament experience under their belts, they intend to win it all.



## **RoboCup Kicks Off in Atlanta: Competition Spawns Technologies for Military and Consumers**

By Brittany McCandless  
ABCNews.com  
July 6, 2007

Transformers may be filling the nation's movie theaters, but real-life robots from all over the world are convening in Atlanta to showcase their futuristic ability to help humans -- and to bend it like Beckham.

From Iran to Ireland, Germany to Greece, nearly 300 teams from 37 countries are participating at RoboCup 2007 at the Georgia Institute of Technology, competing in events from search-and-rescue operations to robotic soccer games. The ultimate goal of the RoboCup project is to develop a team of fully autonomous humanoid robots that will beat the human champion World Cup team by 2050.

"This is truly an international event," said Tucker Balch, an associate professor at the Georgia Tech College of Computing and general chairman of RoboCup 2007 Atlanta. "Each country, and even each university, has a different approach to [creating the winning soccer team]. When we all get together and see what works and what doesn't work, we all learn together and progress."

The competition features research robotics, meaning the more than 1,700 participants from universities, high schools, middle schools and elementary schools are showcasing new technology. Balch said soccer is the game of choice because it's one of the most international games and it's easy to recognize the robot's goal.

"Soccer is simple and everybody gets it," Balch said. "But soccer is also complicated because it involves one team against another team. There are lots of subtleties and many opportunities for creating better and better teams."

Real-time perception, artificial intelligence, multirobot collaboration and design principles of autonomous machines are just some of the technologies at work in a single game.

"It's driving many technologies forward all at once, even though on the surface it appears to be a simple game," Balch said.

RoboCup soccer features robots of all shapes and sizes, including teams of four-legged Sony AIBO robotic dogs and teen-size humanoids. Forget the remote control -- these robots function independently, using multirobot cooperation to jointly execute their game plan.

"That's a technology we hope to see in search and rescue and in the military," Balch said.

Such real-world applications have already been a product of the 10-year-old competition. For example, the algorithm responsible for the lightning pace of the computer vision necessary to track the soccer ball down the field -- 30-to-60 times per second -- has been applied to robotic military vehicles to quickly identify the terrain.

While the RoboCup soccer teams feature all the intensity -- and entertainment -- of international sports, the competition also shows the practical way robots will be used in the future. For example, the RoboCup Rescue competition puts robots in a specially constructed house-size disaster site, where they find and map the location of mannequin "victims." The search-and-rescue competition also has a virtual component, which simulates a disaster area the size of a city block. In this event, the robots work as teams to locate victims in a virtual environment filled with complex hazards and obstacles.

Participants in the RoboCup@Home event have developed technologies for much more personal use, such as assisting elderly and disabled people with everyday tasks at home. These robots follow a human through a random, home scenario obstacle -- trying to avoid furniture or other humans, for example -- to show its capability to guide people.

### **Competing in the 2-Millimeter Dash**

Perhaps the robots with the most futuristic applications are also the smallest. The competition's newest division -- the Nanogram Demonstration -- features microscopic robots no bigger than .03 millimeters. Competing in such events as the 2 millimeter dash, these robots showcase technology that may have long-term medical functions.

For example, Balch said, someday researchers hope to create teeny robots for doctors to inject into the bloodstream, machines that would eat cholesterol or band together in the hundreds to find a clot, destroy it, and find their way back to a place where the body would naturally release them.

Amid the stiff competition, these robot fanatics are also finding the time and technology for fun. The RoboCup Junior leagues, composed of elementary and high school students, compete in a dance event, which challenges teams to create robots that dance to music.

"It's really amazing what these kids come up with," Balch said. "It's not just a cold, sterile robot. They're decorated and they're painted. Humanoid robots just blow me away. They look like just miniature people, and it's so amazing to watch them."

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**Teams play with nuts and bolts of robotics**  
**A worldwide battery of robots take charge at Tech**

Kavita Pillai

*The Atlanta Journal-Constitution*

July 7, 2007

He waddled up to the bright orange ball, set his stance, lifted his foot back and kicked.  
GOOOAAAAL!

This isn't toddlers playing soccer in your backyard; it's RoboCup 2007 — an international competition that seeks to advance robotics and create a team of robots that can beat the World Cup soccer champions by the year 2050.



Held for the first time in its 11-year history on a university campus, Robocup, boasting about 300 teams from 37 countries, has overtaken much of the Campus Recreation Center at Georgia Tech.

The final rounds of competition will take place today and Sunday.

The event was the brainchild of a group of scientists seeking a way to advance robotic research in a fun way. The theme of soccer allows students and researchers all over the world to focus on a singular goal, said Yukiko Matsuoka, chief executive director of the RoboCup Federation.

"You can do the science at conferences, but it's not that fun," she said. "With soccer, everyone in the world can understand the goal."

Sports was a theme all around the competition Friday. Groups cheered on their robots while "robocasters" announced the action.

Frank Niemeir/AJC  
(ENLARGE)

Contests range from soccer games to search and rescue simulations. There also is a junior RoboCup competition for elementary and high school students.

**Christoph Rothermel**, 14, from Germany, competes against a team from Japan in the junior soccer event. There were nearly 300 teams from 37 countries this year.

Can Envarli, a recent graduate of Georgia Tech's master's in computer science program, participated on the institute's search and rescue team, which he said did better than the previous year's team but did not make the finals. The search and rescue category is the only one that allows robots that are not entirely autonomous.

He said the team has been working for a year and a half readying for the competition, which entails sending a tank-style robot through a maze simulating rough terrain to find fake victims.

"We can use our robot in real situations ... to rescue humans from real disasters," he said.

Robots from previous years' competitions have been used in search and rescue operations, including the Sept. 11 terrorist attacks on the World Trade Center.

Most of the rescue robots are sized to navigate small areas — just a few feet long and about a foot tall.

Kevin Kozuszek, director of marketing for KUKA Robotics Corp., the primary sponsor of RoboCup, said the competition is pivotal to moving robotics into the future — away from industrial robots toward robots that can do anything from search a dangerous area to cook your dinner.

"A lot of the things that you see [in the competition] are the intermediate steps between robots that build your car and [service robots]," he said.

RoboCup has been held in the United States only one other time, in Seattle in 2001. Last year it was in Germany in conjunction with the World Cup.

Georgia Tech professor Tucker Balch, chairman of this year's event, sought the contest for Atlanta because of the institute's recent push in robotics research. Last year, Georgia Tech opened the Center for Robotics and Intelligence Machines, a group of 30 faculty robotics experts with \$1 million in annual funding.

The RoboCup event is funded through about \$100,000 in sponsorships from groups such as the Microsoft Robotics Studio and the National Science Foundation.

As far as reaching the goal of beating world champion soccer players with a team of robots by 2050, each year a scientific conference follows the competition where advances are discussed.

"We have to be optimistic," Matsuoka said, likening the process to scientists' previous goal of reaching the moon. "And it's really great fun to be a part of it."

### **Miniature Robots Play Nano-Soccer**

Greg Bluestein  
Associated Press  
July 8, 2007

ATLANTA (AP) -- Exploding from the other end of the field, a silver robot glinted under the light of the cameras and burst toward the lone defender standing between it and the goal.

That's when the "Whirling Dervish," as its creators call it, lived up to its name, spinning furiously in a show of razzle-dazzle. But suddenly, the robot stopped dead in its tracks, hopelessly mired as if it were stuck on superglue.



A metal arm appeared to rescue the wayward robot, but it was no crane - it was an acupuncture needle. And the field it plucked the robot from was hardly the size of a grain of rice.

What do you expect when the robot is six times smaller than an amoeba and weighs no more than a few hundred nanograms?

Robots of all sizes have descended on the campus of Georgia Tech for the RoboCup, an international contest that pits robotic creations against one another in a range of technical challenges.

But perhaps the most intriguing event was Saturday's Nano Cup, a competition hailed by organizers as the world's first nanoscale soccer game.

Held by the National Institute of Standards and Technology, its organizers hope to show the potential for building tiny devices that can be used in manufacturing, biotechnology and other industries. They also hope to develop manufacturing standards for the untapped field.

"If you take an ant and leave it on its own, it can't do much. But many ants can do incredible things," said Michael Gaitan, the leader of the agency's microrobots project. "We think the same way with microrobots. We'll have to see where it takes us. For now, it's soccer."

Five teams from the U.S., Canada and Switzerland answered the call, building microscopic robots that competed Saturday in two events: A two-millimeter dash and a challenging slalom, where the robot must reach a goal that is blocked by stationary defenders that look like running men but are about the diameter of two hairs.

The events take place in a glass-enclosed cube in the corner of a cramped classroom. Two high-powered microscopes project the action to the big screen, and scientists and students fall silent whenever a competition takes place.

The odds-on favorite for the day was ETH Zurich, an impressive Swiss team that developed a sophisticated propulsion system for the robot that's driven by small magnets.

The creation was completely automated, allowing the players to point and click a place on screen and then watch the device move accordingly.

The team has great hopes for the invention, which they developed over the past six months, and has already applied for patents. The team one day hopes to be able to send their robots into a human's bloodstream to treat cancer, cell defects or for other medical uses.

"You can leave the soccer field, build these robots and send them into the blood flow," said Dominic Frutiger, a Ph.D. student at the Swiss Federal Institute of Technology.

But scientific competitions are as much about failed experiments as they are about those that actually succeed.

The creators of the Whirling Dervish, a team of two from Canada's Simon Fraser University, took that lesson home. They took a gamble by building their device with a plastic base rather than a metal one, and the result made the two-millimeter dash look more like a chess match than a sprint.

With a video game controller in hand, team member Dan Sameoto desperately mashed buttons trying to find the right frequency combination to get his microscopic robot moving.

Each twitch on the big screen elicited a gasp from the crowd and encouragement from his teammate, See-Ho Tsang. "C'mon," Tsang cried to the robot. "You can't be tired now!"

Each trial, though, ended with the acupuncture needle floating on screen to rescue the wayward device.

After the event, the two partners huddled around the computer to discuss what went wrong. Next year, they decided, they're going with a heavier device they say won't get stuck as easily.

"The lesson was learned," Tsang said.

Sameoto shrugged as he put Whirling Dervish aside.

"We go through a lot of them," he said. "They're designed to be disposable so we don't get too attached."



RoboCup 2007  
Staff  
TIME.com  
July 12, 2007

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## RoboCup 2007



**RoboCup 2007**

The RoboCup Federation's annual competition, held this year at Georgia Tech in Atlanta, invites scientists and amateurs to construct a robot team capable of defeating the 2050 human World Cup Soccer champions

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