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U-M Student Robot Team Reflects on Win

by Gerald Scott
News Dept.

Robotics engineering at the University of Michigan is about as far from boring or tedium as one can get.

In fact, the U-M Robotics Team described at least one recent initiative as the proverbial adventure of a lifetime.

U-M's "Team Michigan" competed in the MAGIC 2010/2011 university robotics competition in Australia and came away with first prize – $750,000, which it shared with sponsor and supplier SoarTech.

A dozen U-M students were able to travel to Australia in November, 2010, and several of them are still on the team.

They participated in Michigan Robotics Day events at U-M's North Campus in Ann Arbor last week and it was there that they talked about the competition and experience.

(The MAGIC robotics competition was a first-time event and is not to be confused with U-M's Solar Car Team, which also competes in Australia during bi-annual years, etc.)

"We were in Australia for six weeks, it was a good experience – we worked hard and did pretty well," said U-M engineering student Andrew Robinson.

"We got first place, which came with a $750,000 grant, which is great. We have a very strong test-bed, robotics platform for all the research we're doing now).

"All the (U-M) robots are identical at the hardware level and for the purposes of the competition, three of them had special roles. The 11 other robots could say to the special three robots, 'You need to go to this place and you need to disengage this simulated bomb.'"

MAGIC is an acronym for Multi Autonomous Ground-robotic International Challenge (MAGIC 2010), and it featured some of the world's most groundbreaking robotics technologies as the half-dozen university-level teams deployed 43 robots to navigate a 250,000-square meter indoor and outdoor course over 3.5 hours.

The competition was at The Royal Showgrounds in Adelaide, South Australia, and other teams competing included the University of Pennsylvania, Team Reconnaissance from Maryland, Cappadocia from Turkey and MAGICian team from Perth, Australia.

All of these university teams were judged on factors including the maps they produced and the time they took to complete three increasingly complex challenge phases. Teams were penalized for the amount of time they had to manipulate their robots manually.

Automonous is the watchword on the robotics front these days, it seems.

"Behind Team Michigan's robots was an amazing group of students who spent countless hours building, programming and testing the entire team of robots and also dealt with the formidable logistical challenge of putting everything together and shipping it 10,000 miles away," said U-M Assistant Professor Ed Olson, team lead from the U-M Electrical Engineering and Computer Science Dept.

"MAGIC 2010 gave us a chance to show that our research translates to the real world," he added.

The competition was organized by the Australian Dept. of Defense along with the U.S. Dept. of Defense, which was represented through the TARDEC Army engineering lab in Warren.

"This was an outstanding competition, and I have been blown away by the technologies these teams demonstrated," said Dr. Jim Overholt, the U.S. Army's Chief Scientist for Robotics.

"I am sure we will look back upon MAGIC 2010 as a watershed moment for our soldiers (and they technologies they will eventually use from this)."

The victory by Team Michigan was significant enough that the students who participated were introduced at the half-time of a U-M Men's Varsity basketball game recently, along with that check for $750,000. The students were warmly received that night at Crisler Center for their significant academic accomplishment.

PHOTO: GERALD SCOTT

The University of Michigan student robotics team won the TARDEC-sponsored robotics contest in Australia last year, earning a $750,000 prize. From left are U-M students Lauren Hinkle, Rob Goeddel, Pradeep Ranganathan and Andrew Richardson.

GM Reacts to April 11 Incident in Warren

GM reacted to the April 11 incident at the Alternative Energy Center in Warren with the following statement:

"(In Warren), an incident occurred about 8:45 a.m. Wednesday inside a test chamber at the General Motors Alternative Energy Center during extreme testing of an experimental battery . . . .the battery itself was intact.

"The battery tested and the incident have no connection with the Chevrolet Volt or any other production vehicle.

"Employees were evacuated from the building where the incident occurred.

"Five people were evaluated by medical personnel; one has been admitted to an area hospital for treatment."

The Alternative Energy Center is where GM develops energy systems for cars.

Retired GM VP Burns Assists Google On Ambitious 'Driverless Car' Project

second.

"It was a really fascinating event. Turns out there were a couple people there for the whole weekend – Larry Page and Sergey Brin (billionaire founders of Google).

"They ended up hiring some of the students who were on these teams – not just from the winning teams, but teams that had big, bold ideas. It kind of went quiet for 18 months until the *New York Times* broke the story that Google was working on self-driving cars.

"In fact, Google has accumulated over 200,000 miles on public roads (using self-driving cars)."

Google's philanthropic arm is exceptionally busy and said to be working on up to 100 different social, global and technical challenges, including that of transportation.

Burns welcomes their interest and ambition and he doesn't see their participation as any kind of threat to GM or the Big Three – after all, the laws of physics, much less the laws of NHTSA, will apply to Google as much as it always has the Big Three when it comes to advanced vehicle development, including driverless cars.

On Google's test cars, an engineer sits in the driver's seat, even though he is not necessarily engaging systems such as steering, acceleration and braking.

Instead, Google is seeking to automate those complex functions.

"What's going on here is that Google is marrying up the lasers, with the radars, cameras and then Google's mapping system – a very, very digitally rich database," Burns said. "These are pretty complex tasks, they're fusing together, integrating it, and making the car drive in a smooth and graceful way."

Easier said than done, of course, but Burns points out that the "ingredients" for driverless cars are being assembled around us – even though we don't notice or label them as such.

That is to say, modern auto technology advances like lane departure warning, forward crash alerts, blind spot signaling, smart cruise control and the like are the building blocks of a near-future driverless car system.

Add to that the smart highway and connected vehicle programs, where vehicles react to signals and messages from the roadway environment, and you're halfway to an actual, practical driverless car system.

"This is exciting stuff. I have the privilege of working with Google on this, I spend about 3 days a month out in Mountain View, I ride in these cars, on busy cars like Highway 101, and on every trip I can go farther and farther without touching the steering wheel, brake or accelerator," Burns said.

"What they figured out at Google was that it was not against the law to do this as long as you have somebody sitting in the driver's seat. The law didn't say you had to touch the steering wheel, brake or accelerator, you just had to be in the driver's seat.

"I think that's an example of a courageous company doing what they have to do. So why is this so compelling? Driverless vehicles give you more value for the time you spend in your vehicles.

"The market research I've done says that driving is the distraction. Why would you send a text message going 70 mph in a 4,000-pound machine? So why not give the driver his time back – as a driverless car.

"Cars that drive themselves are going to be cars that don't crash."

PHOTO: GERALD SCOTT

The annual Michigan Robotics Day festival at U-M drew an eclectic mix of participants, including TARDEC, Ford and others. Pictured here is the University of Detroit Mercy's student robot.

AAA Michigan Is Disappointed With New Law

DEARBORN – AAA Michigan said last week it is disappointed that legislation which allows some motorcyclists to ride without a helmet on the state's roadways has been signed into law by Gov. Rick Snyder.

Public Act 98, which took effect April 13, is "poor public policy and will increase motorcycle fatalities and injuries," AAA Michigan said in a formal statement.

The new law allows for helmet-less riding if motorcyclists meet three different criteria including a med policy.