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ASHLEY FRASER, THE OTTAWA CITIZEN

A group from the University of Ottawa is working with a $300,000 budget and a scooter with a camera tied atop it, in the hope of making a better interactive mapping service than Google's Street View. Associate professor Robert Laganière is on the scooter; standing, from left, are student Jamal Saboune and professors Eric Dubois and Jochene Lang.

Going beyond Google

A team of professors from the University of Ottawa has created software that takes the Internet giant's Street View to the next level, **VITO PILIECI** reports.

A team of researchers from the University of Ottawa has set out to teach Google Inc. a lesson on how to make software.

The three professors believe the Internet giant's controversial Street View service should allow people to not only venture wherever they want, but allow them to take tours inside buildings.

"We are trying to make an application like (Street View) more immersive," said Robert Laganière, an associate professor in the School of Information Technology and Engineering at the university. "With Street View, all you can do is follow the path proposed by the application. What we want to do is to be able to move in any direction."

Laganière partnered with professors Eric Dubois and Jochene Lang in late 2008 to come up with a superior street mapping system.

The problem with Street View, according to the trio, is that it feels like users are stuck on rails and are only being shown what Google wants them to see. What if they don't want to move in the direction Google is telling them to? Or what if the user wants to head off the beaten path and check out a local park or a landmark that can't be accessed by a car?

"(Now) you make a decision when you are at an intersection about whether to go right or left," said Laganière. "But the way we would like it to be is, if you are in a large space, then you can decide to move in any direction. If you want to approach a building, you can do it from any angle and any direction."

Whereas Street View displays arrows telling users which directions are available for them to travel in, the University of Ottawa software allows users to travel almost anywhere. If a user is checking out street images of Ottawa and wants to hop a curb and head toward the Rideau Canal, they can do so using the university's technology.

Creating the technology has been particularly challenging. While Google has billions of dollars, thousands of employees and fleets of camera-equipped automobiles at its disposal, the team of Ottawa researchers is working on a shoe-string budget.

However, they have managed to reach most of their goals thanks to a bit of funding from the Natural Sciences and Engineering Research Council of Canada (NSERC), an electronic scooter, a donated R2-D2-like robot and the help of a handful of very smart PhD students at the university.

Using the battery-powered scooter, which is driven around town by student Jamal Saboune, the team has collected thousands of images of the university's campus and parts of downtown Ottawa. The scooter is equipped with a panoramic camera and a global positioning system (GPS), which allows 360-degree panoramic images to be captured and inserted into their software to create a virtual map.

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University: Image quality better than Street View

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The researchers are not taking any more pictures than Street View does — the secret is the software that stitches together the images to make them seem seamless. In Google's Street View, when a person moves from one picture to another, they see a blur and then the screen refocuses on the next available image.

When compared to Street View, the university's software makes the experience seem almost like a video game. Moving down a street, across a park or any other area for which the team has collected images, can be accomplished virtually, with the group's software automatically stitching images together, doing away with the need to reload static imagery.

"Our goal is to make you feel like you are there and actually moving through that environment," said Laganière.

The second component of the university's research is to use a small trash-can-sized robot they call the "PC-Bot" to capture images inside buildings. The PC-Bot, which also has a panoramic camera mounted to it, can be pre-programmed with the floor plans of a building and then sent off to automatically capture images.

The robot could be used to take photos of the inside of a museum, allowing people from all over the world to take virtual tours of the facility from the comfort of their own homes.

Dubois, another researcher on the project, said with all the progress the team has made so far, he expects a commercial version of the university's software and mapping technology to be available within the next year. He hopes the university can license the technology, or sell it to a private company that would then be free to offer the software online.

"We have no concept of competing with Google on a large scale," said Dubois. "Our goal is to license these things to companies that can use them."

While the team is finally coming within arm's reach of their goal of recreating the Street View service, they already have ideas about how the service can continue to improve.

According to Dubois, the team has students working on ways to make computer-based mapping services available in 3D.

The university is also working on ways of pulling people, cars and other items that may identify people or infringe of privacy rights, out of images entirely.

Complaints over breaches of privacy have plagued services such as Google Street View since they were first introduced.

"These are hard problems to solve. We have PhD students working on them," said Dubois.