

Students Share Computer Innovations With Business Leaders

By W.D. Lighthall

EVERY ACTION IS SAID TO CAUSE A reaction and a recent event showcasing research projects by U of T computer science students received a pretty fine reaction from the magazine *Canadian Business*.

In its Feb. 12 issue featuring noteworthy business innovations, *Canadian Business* gave a nod of approval to three research projects featured at Research in Action, a half-day event held in early February on the St. George campus.

Under the headline "Innovation: I Want One of Those", *Canadian Business* singled out for praise the iTrustPage, a software program that prevents Internet users from filling out untrustworthy forms online. The magazine also praised a device called COACH for its humanitarian purposes. COACH uses a video camera, computer and artificial intelligence software to help people with dementia.

Canadian Business then crowned an innovation called Glogger as having the "highest cool factor" of all the innovations featured at Research in Action. Developed by

an undergraduate and graduate student team, Glogger is a wireless technology that allows photos taken on camera phones to be posted immediately to the Glogger website.

The brains behind Glogger are Raymond Lo, a fourth-year computer science student, and James Fung, a PhD candidate in computer and electrical engineering. Glogger is a piece of software downloadable to a camera phone, allowing the user to post photos on the Glogger website in real time with one click of a button.

Fung said the technology can be used for such things as showing a friend the step-by-step process for making a dinner recipe. "You just snap pictures as you go and by the time you're finished, all the pictures are on the web," he said.

Because the Glogger technology works anywhere with cellphone reception it has many potential commercial uses, said Lo. For example, a person working in a remote location could need help fixing an electrical or computer installation. "They can take a picture and someone back at head office can guide them," Lo said.

Troy Ronda, a graduate student in computer science, is part of the team that's developed the iTrustPage. The software helps protect people from fake websites that attempt to steal their passwords or gain financial or personal information.

"As soon as you start typing or giving your information, a prompt comes up, asking you to help determine if the web page is legitimate or not. As you proceed, the software then takes you away from that phony page and brings you to the safe [correct] page," explained Ronda, who specializes in Internet systems.

The third innovation mentioned by *Canadian Business*, COACH (cognitive orthosis for assisting activities in the home), is a prototype being developed to help people with dementia complete daily activities with less dependence on a caregiver. Using a personal computer and video camera it tracks a user during a daily activity, such as washing hands, and provides pre-recorded visual or audio cues to help them remember how to accomplish the task.

Professor Craig Boutilier, chair of computer science, said the purpose of Research in Action was to showcase to the wider world the cutting-edge innovations being developed by computer science students.

"From my perspective, it's critical that our research have an impact beyond academic journals and conferences," Boutilier said. "From our students' perspective,

it gives them the opportunity to show off their ideas to companies. It helps the students network and make connections."

The first Research in Action featured 12 innovations and drew about 75 people from Toronto area businesses. Boutilier said his department plans to hold the event annually and hopes to expand it so more students can participate.



Using Glogger technology, co-inventor Raymond Lo's photo will soon be posted online.

PASCAL PROULTE

White-Knuckle Atmospheric Science Takes Flight

By Nicolle Wahl

SCIENCE DOESN'T ALWAYS HAPPEN at a lab bench. For University of Toronto Mississauga physicist Kent Moore, it happens while strapped into a four-point harness, flying head-on into hurricane-force winds off the southern tip of Greenland.

Moore, chair of chemical and physical sciences, headed to Greenland Feb. 18 as part of the Greenland Flow Distortion experiment (GFDex), an International Polar Year research project involving Canadian, British, Norwegian and Icelandic scientists. Moore, a professor of atmospheric physics, is leading the Canadian contingent.

GFDex will provide the first evidence of the role that Greenland plays in distorting atmospheric flow around its massive land and ice mass, affecting European and Asian weather systems. Moreover, the findings may reveal how sea and atmospheric interactions in the Arctic and North Atlantic areas

influence climate.

At the heart of GFDex are wind patterns known as "tip jets." Greenland, an icy obstacle more than three times the size of Texas, forces air to go around its bulk and creates regions of high wind speeds. Tip jets travel east from the tip of Greenland towards Iceland at speeds of 30 to 40 metres per second. Just as wind blows heat away from the body, making windy winter days feel even colder, tip jets blow heat away from the surface of the ocean. This cooler, denser water sinks, affecting currents of circulating warm and cool water within the ocean.

About two years ago Moore discovered a different kind of tip jet, one that blows west towards Labrador. Now known as reverse tip jets, these also force circulation of water over the Labrador Sea to the west of Greenland. "We've seen these things in satellite imagery but no one's ever actually observed them," Moore said. "We'll be making the first in situ observations of these jets. It's kind of exciting."

The data will help scientists understand how the flow of air around Greenland affects weather downwind. "If things are happening near Greenland today, probably two days from now that [air mass] will move down over Europe," Moore said. "Two or three days after it's affected Europe, it affects Asia and then ultimately comes around and affects North America. So Greenland ultimately

affects the whole Northern Hemisphere ... our knowledge will potentially help improve forecasts."

Moore is also hoping the findings will clarify the climate processes affecting Greenland's glaciers, which have shrunk significantly in the past few years.

Making these observations requires both advanced technology and a cast-iron stomach. Moore and his colleagues, along with graduate students and post-doctoral fellows, will be making 17 flights into the tip jets in a British research aircraft.

In order to get the best data, the

researchers need to fly just 100 feet above the heaving seas in winds of more than 140 kilometres per hour. "In these conditions and at these levels, the turbulence will be quite severe," Moore said. "Once, on a similar flight in the Arctic, the lens of my glasses popped out!"

Second Languages Under Microscope

By Margarita Medynsky

IN A MULTICULTURAL COUNTRY LIKE Canada, it is no surprise that a large portion of the population speaks a language other than English at home. After struggling to reach Canada, immigrants are faced with additional challenges such as language barriers. How difficult is it to learn a second language? Is it more challenging for some than others?

Rena Helms-Park, an applied linguistics professor at the University of Toronto Scarborough, and her team of student researchers will supply the answers at the 2007 Canadian Association of Applied Linguistics conference this June, where they will present their findings on the interaction between first- and second-language vocabularies.

Their research compares two very different languages, Romanian and Vietnamese, to examine the transfer process involved in learning a second language. The goal of

the research project is to prove that a Romanian-speaking individual will experience less difficulty in learning English than a Vietnamese-speaking individual because the structure of the English language is similar to that of Romanian. The roots of many words from both English and Romanian are Latin; therefore a portion of the vocabulary can be interpreted by either speaker, especially in academic discourse.

Helms-Park drew inspiration for this project from her own roots. "In India, it was common to function in different language environments. I travelled a lot and had to adjust to the surroundings," she said.

She selected four students to assist her in the research: two graduate students and a duo of motivated fourth-year students, Claudette D'Souza and Ellen Moore.

"A sizable part of my mandate is to provide suitable research opportunities," said Helms-Park, noting

she saw no better way of doing that than bringing her research to her teaching in order to involve students in real work in the field. "This opportunity will allow them to realize that they don't have to think and work within a box, they can go beyond what other people are doing, they can excel," she said.

The graduate students are responsible for test creation for Romanian-speaking learners, while D'Souza and Moore are in charge of data collection and analysis. "My job is to get in touch with Romanian and Vietnamese people, meet with them to complete a multiple choice test and to input the data into spreadsheets, assigning numbers to everything for later analysis," D'Souza said.

D'Souza and Moore are both on their way to becoming speech pathologists. "This is an amazing opportunity that opens a lot of doors," D'Souza said. "We'll definitely be more prepared for the real world."



UTM professor Kent Moore