

# Research News

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## Enriching the user's interactive experience

BY SEAN MOORE  
Research Promotion

The computer mouse has had a good run, but computer scientist Pourang Irani thinks it's time it scurried aside and let a dinner plate relieve it of some tasks.

"The conventional mouse and touch pad are no longer sufficient, they are just not good enough," Irani said. "As new devices and new technologies come into play you have to consider what different interactive paradigms you can use."

Irani's lab is looking at how to design next generation computer interfaces that will no longer be chiefly utilitarian; they will also enrich the user's experience. He collaborates with Philips Research and Microsoft Research.

To develop them he relies on theories of perception, cognition and motor-behavior. Before new techniques can be introduced, fundamental questions about human limitations need to be answered so that interfaces operate in ways that are intuitive and mesh with natural cognitive abilities.

"In our lab we start with an understanding of how humans operate

and then we build techniques that make digital interactions as natural as possible."

New ways to share and experience information result.

In his lab, a table suitable for a family of four sits under a ceiling-mounted projector. A map is displayed and Irani moves it around using, for now, his mouse. But his lab is developing small infrared cameras that will line the table's edges and detect the commands of hovering fingers.

"You may want to show photos from your trip that you captured with your cell phone. So, you may be able to 'chuck' them off your cell phone" – off the screen like they were cards and you were a blackjack dealer – "onto the table display and then rotate them with a dinner plate or cup so you can share stories with everyone around the table," Irani said.

In addition to digital tables, Irani is trying to understand how he can get the roughly 1.8 billion people who use mobile phones or personal digital assistants (PDAs) to operate them to their full extent. Large documents like maps or text files pose a particular challenge.



Photo By Sean Moore

Computer scientist Pourang Irani stands by a tabletop he's converted into a computer screen.

How do you visualize easily-understood information about a destination's location – including its proximity – on small PDA screens using minimal cues?

One elegant interface uses wedges. After a user types in what she wants to find, say cafés, her location will be a dot in the middle of the screen while the bases of wedges appear on the screen's fringe.

People, Irani has found, are quite good at extrapolating the location of a target by calculating where the lines of the wedge would meet off the screen – with each wedge's width positively correlated to how far away its apex lies.

Word documents also present a problem for PDA users. Apple introduced the idea of flicking instead of using a scroll bar to proceed through the pages. It's a great idea, but not perfect. For one thing, users cannot control where in the document they will land after each flick. Irani is working on a few solutions, one which involves, again, a hovering finger.

"People have had PDAs and cell phones for years, but the fact that they don't enjoy using them to read documents or to browse a map suggests there is a lot of work that needs to be done."

## Changing our view of water is crucial

BY SEAN MOORE  
Research Promotion

If you row row row your boat gently down the stream, note that things are not as merry as they seem.

Most of Manitoba's wetlands, which are the aquatic equivalents of kidneys, have been flooded or drained. Good things never come from loosing vital organs.

A wetland at its most basic level is an area covered with water that supports aquatic plants. A marsh is a wetland and Manitoba is home to one of the largest in North America: the 50,000-acre Netley-Libau Marsh at the end of the Red River. But it's dead.

In 1913 politicians decided to dredge a bigger opening into it and the Red River has since exploited that. The flooded kidney cannot function, which is a plausible impetus behind Lake Winnipeg's algal sickness.

Many people view wetlands as having little value and this delusion has dire consequences. So on March 26, biological sciences' Gordon Goldsborough will set the record straight at the next *Get to Know Research at Your University* lecture series (details below).

Goldsborough is the Director of the University of Manitoba's Delta Marsh Field Station, the Chair of the Lake Manitoba Stewardship Board, and a member of the Manitoba Water Council, to list a few of his memberships.

"The decline in the quality of wetlands is a symptom of the decline in the importance we put on water," Goldsborough said.

"The public's perception is that water is limitless and we can use it for frivolous things. Well, we may have lots of water, but very little is in a drinkable form," he said, noting that Shoal Lake, reputedly the best water supply in North America, has recently shown alga blooms.

"But it's water consumption that gets me. We just don't get that we will eventually have to conserve water. I'm probably going to be living when serious problems arise, so when people say 'think of your grandkids', well hell, I'm not thinking of my grandkids. I want clean water to drink when I'm an 80-year-old."

Returning to the topic of Netley-Libau Marsh, this autumn Goldsborough will begin examining it to see if it can be resurrected. He has no idea if it's possible because ecologists have never tried to revive something so far gone.

If the Netley-Libau Marsh were restored it could reduce nutrient loading going into Lake Winnipeg by six per cent. That may sound puny, but that equals the city of Winnipeg's nutrient discharge. Deprived of this natural system, however, the city now needs to invest in expensive equipment to do the job of plants.

"The water problems we face stem



Submitted Photo

Biological Sciences' Gordon Goldsborough is seen here conducting field research in a marsh. He will speak about this work at a March 26 event.

from the fact that people view small bodies of water as a liability – a place for mosquitoes to breed or otherwise good farmland drowning. This view has to stop. We need to start seeing water and wetlands as an asset. In short, we need to change our attitude towards water."

To learn more, attend "But Nary a Drop to Drink: Manitoba's Wetlands

and Water in the 21st Century" at the next *Get to Know Research at Your University* speaker series on Mar. 26. It starts at 7 p.m. in the Smartpark boardroom, located at 135 Innovation Drive. Admission is free and all are welcome. For more information please call 474-9020.

## Bringing Research To Life

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