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Bhavani hits the bullseye

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Americans never do anything without consulting the internet these days. Take healthcare for example. Patients research their ailments on the net before consulting with their doctors and are prepared to knowledgeably discuss alternate courses of therapy.

Doctors, for their part, and for reasons that much have to do with malpractice insurance, prefer to discuss options and avoid recommending any particular treatment. The quality of the discussion — which could be about a choice between chemotherapy or radiation or surgery in the treatment of cancer — suddenly hinges around the quality of the information found on the net.

No wonder then, that a whole new field of academic study has grown around how people use the net. Several American universities have created new faculties, which bring together people from diverse academic backgrounds to study the complex interplay between people, information and technology.

One such institute is the University of Michigan's School of Information, where Suresh Bhavnani is doing some cutting edge work in this field.

The 45-year-old graduate of Mumbai's JJ College of Architecture, moved into the then nascent area of computer-aided design (CAD) when he did his Masters degree at UCLA.

He then made waves in American academia with his ethnographic research on how practising architects use CAD software, which earned him an interdisciplinary PhD — in architecture and computer science — from Carnegie Mellon University in 1998.

Tracking computer usage in the offices of a medium sized architectural firm in America's mid-west in the early 90s, Bhavnani discovered that CAD software wasn't improving productivity in the firm because architects weren't using it efficiently.

Indeed, they were drawing on the computer exactly as they once drew on their draft boards, leading Bhavnani to introduce the term 'T-Square Metaphor' into the realm of human computer interaction studies (akin to the typewriter metaphor observed in the early word processor usage, when typists would punch the enter key at the end of every line).

On the draft board, architects start drawing from the upper left hand corner and finish at the lower right hand corner. This strategy is deeply ingrained since any other method tends to produce a smudged drawing.

On the computer, however, this is grossly inefficient. This led to the general observation that neither good interface design nor mastery of the basic commands lead software users to use efficient strategies.

Bhavnani's PhD thesis built on his study of architects to produce a general theory on training people to use new software. With a \$400,000 grant from the National Science Foundation, he

launched a detailed project to observe and model inefficient behaviours on computers and develop a framework of efficient strategies to fix them.

The nine strategies Bhavnani has come up with apply not just to CAD packages, but to widely used software like Microsoft Word and Excel. For example, a common task is to compare two parts of a document that cannot fit on the screen simultaneously.

Most users scroll up and down or cut-and-paste the two parts together, thereby altering the document. However, a more efficient strategy is to use the split window command to bring the two parts of the document together before comparing them.

In the computer age, end-users don't often pay attention to the process by which work is created, but Bhavnani says his own research is motivated by an abiding interest in processes. "The process of art is not looked at as much as the end product," he says, "When I was a practising architect, I'd keep asking why things came to be designed in one way and not in another. My bosses finally advised me to get into academics. Practitioners have no time for such questions."

Bhavnani's recent work involves studying the search strategies people use to zero in on everything from healthcare information to the best shopping deals to porn. What makes for a good search strategy in healthcare?

When Bhavnani gave a librarian of a large hospital the task of finding three kinds of people who should and shouldn't be given the flu vaccine, she accessed — not Google — but MedilinePlus, a US government run healthcare site. Once she'd extracted the required information, she did cross check on Google, using the brand name of a vaccine she had obtained.

This led her to the site of the pharmaceutical company that manufactures the vaccine, from where she retrieved a comprehensive list of people who should and shouldn't be given the vaccine, since the law requires such information for all pharmaceutical products.

A similar experiment with an expert in shopping, this time with the aim of finding the lowest prices for digital cameras with specific features, had the individual first accessing a review site (a new web genre where consumers review products they've bought) and then on to mySimon, a price comparison site. The third step was to go to StapleS, an e-commerce site that gives discount coupons for other vendors.

However, when the tasks were switched, both the experts floundered. The healthcare expert used Google and was led to the home sites of major digital camera brands, which don't feature prices. After an hour of clueless search, she finally gave up. The shopping expert also used Google to get information on the flu vaccine and did manage to put together some fragmented information, but it took him twice the time.

Though he's a big admirer of Google, Bhavnani says it doesn't always work very well when the user is looking for comprehensive information in critical areas like healthcare. In an article to appear in The Journal of the American Society for Information Science and Technology, Bhavnani explains that finding comprehensive information about a topic is difficult using Google because the information is typically scattered across different sites which don't always appear in the top hits.

"Searching for comprehensive information requires more sophisticated domain specific strategies

such as those practised by healthcare and shopping search experts. I've spoken to Google about this issue and they've said that finding comprehensive information is just not their market," says Bhavnani.

Bhavnani's now working in league with the Palo Alto Research Centre (a subsidiary of Xerox Corporation) to address this issue by developing a series of domain specific portals that automatically provide search strategies to help users find comprehensive information on specific topics — beginning with one for healthcare.

Does he plan to incorporate expert search strategies for porn? Bhavnani grins impishly and says: "You don't have to search for those. They're delivered daily to your inbox."

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