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is always changing, people often have a hard time finding a site again. Re:Search relies on information from a user's past searches to determine which items are more relevant to him or her. Teevan found that people tend to remember the first item in a list of previous search results, as well as items they clicked on; they also tend to get confused if the results they clicked on have changed position in the list. So she designed Re:Search to keep clicked links in their previous positions and insert new links in positions where they will be noticed without being confusing or distracting.

One of Teevan's key ideas is that search engines can employ information about users to help them zero in on the results they need. Since she joined Microsoft Research in 2006, she's developed a number of experimental browser plug-ins that work with Internet Explorer and that will refine search results for each user. One, called PSearch, uses an index of documents, e-mails, and other material on the user's hard drive to customize the results delivered by an Internet search engine. For instance, if she types her husband's last name into a typical search engine, the top hits are for a financial-services firm that shares his name. When she turns PSearch on, the first sites listed relate to her husband.

Horvitz says that almost every computer at Microsoft has PSearch installed and that it saves employees immense amounts of time. "What I like best is that all the personalization is going on on your desktop," he says. In fact, PSearch never shares a user's personal information with the search engine—the results are re-sorted after they're delivered to the user's computer.

Teevan's programs have yet to be released commercially, and because search is such a competitive area for Microsoft, both she and Horvitz declined to discuss any such plans. But both eagerly talk about her contributions to Microsoft's new search engine, Bing. Teevan says she met regularly with Bing's developers to help them understand how people search and how that knowledge might be used to improve search results. Horvitz points more directly to the left-hand column of the Bing search results page, where a short list titled "Search History" appears. "The work Jaime is doing—some of it involves memory between sessions, to make your search more effective," he says. "You see just the tip of the iceberg right now in the current Bing search." Teevan's work is actually far more advanced, Horvitz says. Hinting at things to come, he adds, "You might watch that corner of Bing over time." —Kurt Kleiner

● NANOTECHNOLOGY

RANJAN DASH, 32

Y-CARBON

Nanoporous carbon could help power hybrid cars

PROBLEM: Ultracapacitors, which last longer than conventional batteries and can deliver stronger bursts of power, hold great promise as energy-storage devices for applications such as hybrid electric vehicles. But ultracapacitors typically can't store as much energy as batteries, so they need to be recharged frequently. That drawback has limited their use.

SOLUTION: As a graduate student in materials science at Drexel University, Ranjan Dash used a novel chemical recipe to engineer nanoscopic pores into the carbon materials used in ultracapacitors. The tiny pores, whose size can be tuned with subnanometer precision, provide more surface area for charged particles to stick to, doubling the amount of energy the ultracapacitors can hold. Dash cofounded Y-Carbon, a startup based in King of Prussia, PA, to commercialize the technique, and he now serves as its chief technology officer. He says that his company has already developed a prototype ultracapacitor. The plan is to partner with other companies to develop this and other applications for the porous material, which Y-Carbon will manufacture. The first ultracapacitor products could be on sale in about two and a half years, Dash says.

—Neil Savage

