

Web searching made more successful with automated, personalized assistance system

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A Penn State researcher has developed software that improves Web searching with a personalized system that offers automated assistance for structuring and refining queries, evaluating search results and finding more relevant information.

"Research shows 50 percent of all Web results retrieved are not relevant, pointing to a need for improved searching techniques," said Jim Jansen, assistant professor of information sciences and technology. "This technology enabled a 20-percent performance increase."

The technology, designed to be integrated with a browser, monitors what searchers are looking for based on user-system interactions and then interjects help in finding needed information.

Other approaches to personalizing searches rely upon "explicit feedback" where the system interrupts searchers as they hunt for information. Research has shown that only 1 percent to 2 percent of users are likely to use such systems because of the extra effort involved, Jansen said.

His technology uses "implicit feedback" as revealed through searchers' query patterns, so it does not place a burden on the user. Furthermore, because the application occurs on the client side and not the server side, it leverages the downtime during searches to complete its computations.

The technology is outlined in a paper, "Seeking and Implementing Automated Assistance During the Search Process," available online at www.sciencedirect.com that will appear in print in the Journal of

Information Processing and Management's July 2005 issue.

Jansen evaluated the automated personalized assistance system with 30 college students who were instructed to search for five minutes on one of two chosen topics. The students were told their Web-search system had searching advice that could be accessed by clicking an assistance button on the browser. The searching assistance also could be ignored.

"Users were receptive to the assistance, taking advantage of it 54 percent of the time," Jansen said. "All viewed it at least once and 27 of the 30 users implemented the assistance, suggesting that the help was of value."

That is a higher implementation rate than with passive help systems which few people take advantage of, Jansen added.

The test results also showed at what point in the search process users could benefit from even more personalized assistance. This occurred after viewing the initial results and after viewing a relevant document.

Since this initial research, Jansen has improved the software to make it more effective and responsive to users' needs.

"The next step is to improve the application where the assistance is personalized at the individual level based on individual needs and interaction patterns," Jansen said.

Source: Penn State

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