

The engines of change

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Jay Aslam explains how search engines have evolved. Photo by Mary Knox Merrill

In today's wired world, search engines have changed the way people find data, and social searches are making it even easier to find exactly what you're looking for, with a little help from your friends. For example, a recent partnership between Facebook and Microsoft enables Facebook users searching on Microsoft's Bing to see their friends' faces in the search results next to web pages their friends have "liked" and shared online.

Jay Aslam, professor in the College of Computer and [Information Science](#) at Northeastern University, explains how search engines have evolved from simple databases into the speedy, sophisticated and personalized recommendation systems we rely on today.

How have search engines evolved since their

inception?

Information retrieval systems have been around for quite some time, predating the web itself by decades. However, the earliest information retrieval systems relied almost entirely on "on page" information — that is, the words and other features present within a document itself -- to determine the relevance of that document to a user query. Modern web search engines, on the other hand, leverage a great deal of "off page" information as well, such as the hyperlink structure of the web graph, the "anchor text" information associated with the link from one web page to another, and "click through" data that search engines collect about the web pages that users actually visit when presented with a list of [web pages](#) in response to a query, to name but a few important examples.

How will the new form of personalized social search affect the way we interact and retrieve information? Will other search engines adopt the social search function, and what future trends can we expect to see in search engines?

Many search engines are now leveraging context to help determine the results returned to users. That context may be temporal -- a search for "holiday recipes" may well return different results at Thanksgiving than at Christmas -- and/or spatial — a search for "movie showtimes" may well return different results in San Francisco than in Boston.

Personalization is another form of context: search results may depend on the identity of the user, such as her past search and browsing behavior.

Personalized social search is yet another example, where [search results](#) may depend on one's social circle. This may well have an impact, especially for searches related to recommendations: products,

restaurants, movies and so forth. Recommendation systems such as those employed by Netflix and Amazon have proven quite successful, and these systems effectively make recommendations based on the tastes of anonymous users whose profiles "match" the given customer. Recommendations effectively made from known friends may well be more trusted, if not more accurate.

Was a social network partnership with a major search engine inevitable?

Certainly the partnership between Facebook and Bing makes sense, and was perhaps inevitable given their mutual competition with Google.

What is your take on any potential privacy or security issues that might arise?

Understanding and controlling one's privacy on the web is difficult. The recent controversy with [Facebook](#)'s privacy policy is but one example, as are personalized retargeted ads that "follow" one through cyberspace. Having one's recommendations "pushed" to others only adds to this mix.

More information: View selected publications of Jay Aslam in IRis, Northeastern's [digital archive](#) .

Provided by Northeastern University

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