

The Accuracy of Search Engines

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Abstract

Because users turn to a search engine to bring them the information they seek as fast as possible, this paper explores a sample of millions lines of query results in AlltheWeb and looks to compare the number of searches that a user viewed only one website, ending his search, and the number of searches that a user viewed multiple websites. Additionally, the number of times a user returned to a previously visited website was counted and the number of times that the first website viewed was revisited during the search. A sample of 1010 queries from 2001 AlltheWeb data was examined. 41% of users, 417, viewed only one website, while 59%, 593, viewed multiple websites. 190 of those users revisited a website during their search and 93 revisited the first website they view. With this data, it can be inferred that in 2001, the search engine AlltheWeb provided a little more than half its users with a positive result with the first website. With today's internet, search engines are trying to significantly increase from half of its users being satisfied with the first result to all of them being satisfied. New technologies are being introduced to increase accuracy.

Introduction

In today's internet environment, search engines are dominated by Google and other engines such as AlltheWeb and the newly created Bing. The numerous search engines are constantly vying for users, boasting better search results and features. As society evolves, from the days of library trips to the increasing use of the internet and technology, search engines have become a gateway to vast knowledge. One result of this is that countless individuals, many not particularly tech-savvy, are attempting to use technology to improve their lives. The competing companies and their engines must focus on certain criteria to attract the possible users in our world.

One of the most important criteria to be examined is that of can be called “accuracy.” A single search on an engine can return thousands of results. As such, the idea of sifting through dozens of pages of information is unattractive, even to those accustomed to heavy technical work. Accuracy comes into play as the ability of a search engine to bring to the user a result that will immediately satisfy the need desired. If an engine's very first result is able to provide the information and knowledge a user was looking for, time was saved and the efficiency of the search engine would be remembered. In time, an engine's accuracy could very well be a selling point for the service, guaranteeing quick and easy use to find any piece of information.

Our group has been provided with search data for results from AlltheWeb. The data was captured in 2001 and provided over a million lines of search query information – so much, in fact, merely opening the data file caused memory issues. Our goal was to examine this data, attempting to identify how accurate AlltheWeb's engine was. It's important to understand how far a user is willing to go to find their desired information and how likely it is they find it within the first source identified.

Methodology

For our search, we decided to use a random sample of the data to statistically apply it to the population of the data. We looked at 1010 “sets” of data. A set of data is defined as one line of information pertaining to a particular search resulting in one website visit, or multiple lines of data pertaining to one particular search resulting in multiple websites visited. We noted how often a user did an one-and-done search, meaning that the first website a user visited after gaining search results was the only site that person visited and did not continue to look for more information. We also looked for how often a user continued a search past the first website he chose.

We defined our categories as “One Search Resolution,” defined as a user searches one entry or phrase, chooses a website, and does not continue his or her search, and “Multiple Result Selection,” defined as a user searches a single topic, and selects more than one website. For our purposes, if a user continued using similar terms in his search but changed the exact wording of the query, we still considered this a “Multiple Result Selection.” For example, a user enters in “adobe acrobat,” looks at a website, and then changes the search “adobe acrobat reader” which yields other websites that he visited, we considered this the same topic and thus linked them together. Additionally, we looked at “Repeat Websites,” which we defined as during a “Multiple Result Selection” search, a user visits Site A, then continues the search but returns to the same Site A at some point during the search. For example, a user searched “wood burning stove” and went to www.fcmfireplaces.com. He looked at other sites after www.fcmfireplaces.com, but later in the search, the user returned to this same website.

We also considered the situation where a user revisited the first website their search yielded during a “Multiple Result Selection.” We called this “Repeat First Website.”

Results

	Number of Occurrences:
One Search Resolution	417
Multiple Search Selection	593
Repeat Websites	190
Repeat First Website	92

Table 1: Results of Queries

Looking at the results presented in Table 1, it can be seen that more users (59%) visited more than one website after starting their initial search. 41% of the users were apparently satisfied with the first website they visited. Of the users who viewed multiple websites during their search, 190 (32%) returned to a website they had seen previously. 92 (16%) of those users returned to the first website that they selected after their search results were given by AlltheWeb.

Discussion

After our data gathering, we gather several interesting findings. First, our group was surprised at the relatively high percentage of users whose first website result was sufficient for them (41%). While this was not the majority of the searches, it is a statistically significant piece of information. It shows that many people in 2001 were satisfied with their search results. Does this mean that users in 2001 were using search terms that they knew would yield the correct results? Possibly, but we believe that the searches were specific enough, and common enough, that AlltheWeb was able to identify what the user was looking for. 41% of searches were simple enough that the search engines can find the “right” website for the user.

Now, if we look at the other result of the search, we see that 59% of the searches in 2001 continued past the first website result. The majority of users needed to view more than one website to find the information they were looking for. If Nielsen is incorrect with his conclusion that users do not read anything on a website, then we can assume that users are spending more than just a few seconds on each of the websites to which they go (1997). According to Byrne, John, Wehrle, and Crow (1999), users spend most of their time reading during a search. Therefore, the time of the search is increased by a significant margin every time a user must look at a new website.

Out of the users who visited more than one website, 190 of them returned to a website they had already visited. Why? While the 1999 research of Byrne et al. showed that users spend most of their time reading, as mentioned before, users do not necessarily read every website at which they look. Many times the user reads certain parts of the website, while scanning the rest. After navigating away from the website, the user may determine that something that they had read previously might be worth more investigation compared with the other results they were

getting from other websites. This leads us to another interesting question: Are search engines more accurate than we give them credit? If we take the 92 users who returned to a previous website for more information and add them to the 417 users who only needed one website to find their information, we have a majority of users who only needed the first website of the results list to provide them the sufficient information. In 2001, over half of the users were able to find their information from the first website they selected.

Conclusion

Accuracy is exactly that all search engines are trying to increase. A search engine that claims it can provide the correct website with the information a user wanted 9 out of 10 times would most likely dominate the web. What if it could yield the correct result 99.9% of the time? Search engines now are trying to get as close to 100% accuracy as possible. The new search engine Bing has a “visual search” function that allows users to look for pictures of what they want, when the information they are looking for is something they can picture, instead of a piece of text (Sutter and Griggs, 2009). This is a current attempt to move towards 100% accuracy. In 2001, AlltheWeb provided only a little over half of their users the correct website on first try. In 2009, search engines are trying to make it so 100% of their users find their desired information right away. As search engines find new ways to increase their accuracy, users will continue to see improvements in their search results.

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