Good Abandonment in Mobile and PC Internet Search

Introduction to Information Retrieval
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Link Analysis for Private Weighted Graphs
Good Abandonment in Mobile and PC Internet Search

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ABSTRACT

Query abandonment by search engine users is generally considered to be a negative signal. In this paper, we explore the concept of good abandonment. We define a good abandonment as an abandonment query for which the user’s information need was successfully addressed by the search results page, with no need to click on a result or refine the query. We present an analysis of abandoned internet search queries across two modalities (PC and mobile) in three locales. The goal is to anticipate the prevalence of good abandonment, and to identify types of information needs that may lead to good abandonment, across different locales and modalities. Our study has three key findings: First, queries potentially indicating good abandonment are up to a significant portion of all abandonment queries. Second, the good abandonment rate from mobile search is significantly higher than that from PC search, across all locales tested. Third, classified by type of information need, the major classes of good abandonment vary dramatically both locally and modality. Our findings suggest that in a manner similar to our prior study consider query abandonment as a negative signal. Further, there is a potential opportunity for search engines to drive additional good abandonment, especially for mobile search users, by improving search features and result snippets.

Categories and Subject Descriptors
H.3.1 [Information Storage and Retrieval]: Information Search and Retrieval

General Terms
Measurement, Human Factors

Keywords
good abandonment, mobile internet search, PC internet search, query analysis

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ACM Reference Format

1. INTRODUCTION

The information retrieval community has a long tradition of using user behavior on search results as a positive signal. Clicks and sometimes a lack of clicks are used to learn statistics about which terms are considered relevant [14, 15], and to evaluate GUI design and click-through rates [9, 10]. It has been considered to be an indicator of user dissatisfaction if users choose not to click on any results, or worse, “abandon” the query by simply clicking on a result or refining the query again [19].

Interest in search abandonment has added freshness to the past several years that attempts to answer users’ information needs directly on the search results page, without requiring a click on any of the results. Leading engines now provide a large array of these features, including summary,又称, featured snippets, stack queries, local business addresses such as searcher, stock quotes, local business hours and address, images, current news headlines, short information, package delivery tracking, and many others [1, 2]. In addition, the results expected returned by search engines have improved over time [10, 17] and may often present information more directly [7].

In this paper, we explore the concept of good abandonment. We define a good abandonment as an abandonment query for which the user’s information need was successfully addressed by the search results page, with no need to click on a result or refine the query.

We present an analysis of abandoned queries sampled from Google’s search logs. Specifically, we analyze abandoned queries from three countries (the United States, Japan, and China) across two modalities (PC search and mobile search) for a total of six query streams.

We are particularly interested in mobile search and how it compares to PC (desktop/laptop) search with respect to abandonment. We anticipate that there may be differences for several reasons. First, mobile devices—such as the Apple iPhone—generally have smaller screens and low battery life, and must work in a noisy environment. Second, mobile users are more likely to engage in activities that are not related to search. Therefore, we presented a control query in a way that may affect mobile users differently. Finally, mobile search is usually performed by users who have limited access to a computer keyboard and are more likely to abandon search results. Second, automatically build a link from users while in a “text-free” state of mind. For example, users may use a mobile phone to search for their PC, and use mobile search to answer questions that come up in a reflexive manner—what is the weather going to be like tomorrow? What time does the movie start tonight? What size was the celebrity born, etc. [14, 17]. This is even more so as, if real, we would potentially drive good abandonment on...
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• Information Retrieval uses some basic signals as quality indicators:
  • Clicks: indicate good results
  • Non-click: indicate bad results
  • No click: indicate bad results
• This paper challenges the “no click” is bad assumption
  • No click: is called “abandonment”
• If a user gets the answer they want in a snippet...
  • that is good abandonment
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- Examples:
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- Methodology:
  - Google Researchers
  - Collected 6 types of abandoned queries from:
    - China, Japan, and the U.S.
    - on PC and on mobile
  - Abandoned query is:
    - a query without a click or any further query for 24 hours
  - Removed personal queries and malformed queries
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- Methodology:
- Sample size of abandoned queries

<table>
<thead>
<tr>
<th></th>
<th>PC</th>
<th>Mobile</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Japan</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>U.S.</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>
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- Methodology:
  - Evaluated samples by hand for upper bound
  - Could this query have been answered automatically?
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- Methodology:
  - Evaluated samples by hand for Google results
  - Did this query get answered automatically?

![Bar chart showing abandonment rates in Mobile and PC searches across different regions.](chart.png)
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- Methodology:
- Categories of abandoned search

![Bar Charts showing abandonment rates by category and region for mobile and PC usage.](chart.png)
• Methodology:
  • Queries that could be answered that weren’t by category
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- Methodology:
  - Queries that could be answered that weren’t by category

![Graph showing comparison between US Mobile Search and US PC Search]