Chapter 10
Improving Search and Navigation User Experience by Making Use of Social Data

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ABSTRACT

Available user-generated content provides a huge opportunity to contextualize and improve search and navigational processes. Currently, the huge amount of available social data requires that new forms of personalized content indexing be oriented towards a more efficient reuse and retrieval of information. Based on these considerations, this chapter presents a new system that makes use of the social profile of the user, which is automatically extracted and modeled from social network platforms, to improve the search and navigation experience of the user. This proposed system dynamically defines the social context of the user in way that allows it to be positively used to improve his navigational experience. In this chapter, the authors provide a set of visualization tools that permits the user to be immersed in a user-dependent visual space that represented by a set of text boxes that are semantically related to the user query. These boxes represent possible context-aware refinement of the user search interest which are represented through different cohesive set of terms extracted from his social profile. Within this immersive system, at each step, users can deepen their searches by selecting a semantic box that best fits with their needs. This chapter also presents an evaluation aimed at testing the efficiency and the usability of the proposed system and provides real case scenarios and user studies that validate the proposed approach from the user point of view.

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INTRODUCTION

The problem of indexing and accessing Web data is becoming more important than ever with the explosion of contents available online and offline. Billions of documents are now available and new strategies are needed to provide users with a personalized search and navigational experience. However, even though every user has different needs and requirements, the majority of the current search engines tend to offer the same strategy and possibilities to each user and they fail in providing context aware access to the available documents. This problem cannot be solved by the traditional approaches as they only make use of a general, high-level, statistical (and/or semantic) analysis of the content itself, which is no longer sufficient.

In literature, many authors have investigated the variance in the informational goals of people using search engines, and the ability of current search tools to address such different goals. A study by Teevan, Dumais, & Horvitz (2005) showed that people's opinions differed significantly about which search results were considered to be relevant for the same query. This is due to the fact that users have different informational needs, even when they express their basic query intent by using similar keywords (e.g., "key papers in information retrieval" vs. "important papers in information retrieval"). The analysis suggested that, while current Web search tools are successful when trying to retrieve results that satisfying the range of intentions that people may have for a given query, they are failing when trying to discern individuals' more focused, search goals. This problem clearly highlights the opportunities available to achieve significant improvement in search results by custom-tailoring the results to individuals. This analysis should motivate the research community to pursue search algorithms that return personalized results instead of treating all users the same. Following these assumptions, the work presented in Pitkow, et al. (2002) described two general approaches to personalizing search results for individual users. In one case, the user's query is modified, reformulated, or augmented by reporting the additional information retrieved through statistical approaches. In the second approach, there is no modification of the user's query and the same request is issued for all users, but the results are re-ranked using information about individuals.

In order to personalize search results, taking into consideration that most people prefer to not spend their time specifying detailed informational goals, many existing approaches try to determine them in an automated manner in order to better clarify the implicit goal or intent of the search query. It is a common practice to explore user profiles: this exploration can be based on search related information, such as previously issued queries and/or previously visited documents, and on other information, such as what the user has read and shared. Following this common approach, our research suggests that by treating the implicitly constructed user profile as a form of relevance feedback, it is possible to successfully personalize search and navigational approaches.

Today, even the navigational experience needs to be personalized to offer a more direct and on demand navigational experience. Indeed, the need for a more informed navigational system within large Web corpora has been highlighted in literature, but effective solutions still remain elusive. Most commonly used text visualization tools, such as term- or tag-clouds have significant limitations. A tag, whether provided by the user or extracted from the textual content itself, provides an easy way to search and index Web documents and other on-line media and documents. However, while this helps users quickly observe the most frequent terms in a text collection, this system falls short in making the context in which these terms/tags apparent.

For these reasons, this chapter proposes a system that is able to take into account the context of the user, defined through his user-generated content retrieved in real time, to improve the