# Extracting sub-topics and re-ranking search engine's query results using social bookmarking and social tagging systems

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## Abstract

With the development of the Internet in recent years and the increase in the amount of information, finding information on the Web has become one of the main uses of users. Despite improvements made in search ranking algorithms of web search engines information seekers still face many problems. Web search queries are often ambiguous and multi-faceted. Many attempts were made to identify meanings and aspects of search queries and to re- rank search results according to user's needs. With the emerging of Web 2.0 many services were provided in order for users to publish and share content. One of those services is "Social Tagging" which allows users to annotate information items. Popular use of this platform is "Social Bookmarking" – a service that allows users to upload and annotate URL addresses. In our study, we proposed an algorithm and a user interface combining data retrieved from a standard search engine with data retrieved from social bookmarking systems in order to extract sub-topics for a given search query and re-rank search results according to the sub-topics selected by the user. The sub-topics were ranked based on their Tf-Idf weight which reflects the quality of the sub-topic. The performance of the algorithm in terms of re-ranking search results is tested by an automated process. The process receives as an input a list of search queries, extracts sub-topics for each query based on data retrieved from "Google" and "Delicious", automatically selecting number of sub-topics for each query and re-ranking search results according to the sub-topics that have been selected. Our study showed that the sub-topics extracted for a given search query are qualitative and describe the aspects and meaning of the query. We also showed that our re-ranking methods improved Google's performance in terms of precision and ranking.

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