

# Social bookmarking and information seeking

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## 1. Social Bookmarking Systems

In recent years, there has been tremendous growth in shared bookmarking applications. Introduced in 2003, the del.icio.us social bookmark website was one of the first of this kind of application, and has enjoyed an early and large base of committed users. A flurry of similar offerings has since been unveiled [see (Hammond, et al., 2005) for a recent review].

These internet oriented social bookmarking services have been adapted for use in large organizations. Examples include the *dogear* (Millen, et al., 2006) and *onomi* social bookmarking services (Damianos, et al., 2007). Both of these enterprise-ready bookmarking services support bookmarking of both internet and intranet information sources, and provide user authentication via corporate directories.

There are two distinguishing characteristics of social bookmarking systems. The first is the use of keywords, or tags, that a user enters to describe the links he or she saves. These tags allow users to organize and display their collection with labels that are meaningful to them. Furthermore, multiple tags allow bookmarks to belong to more than one category, a limitation of the traditional hierarchically organized folders found in most Web browsers. The second significant characteristic of these social bookmark applications is the social nature of their use. While bookmark collections are personally created and maintained, they are also typically visible to others. As a result, users benefit by getting pointers to new information from others while at the same time getting a general sense of other people's interests.

These new social bookmarking applications are a natural and powerful extension of existing social navigation tools and practices (see, for example, (Dieberger, 2003; Munro, 1999)). They provide a mix of both direct (intentional) navigational advice as well as indirect (inferred) advice based on collective public behavior. By definition – these social bookmarking systems provide “social filtering” on resources from the web and intranet. The act of bookmarking indicates to others that one is interested in a given resource. At the same time, tags provide semantic information about the way the resource can be viewed.

Social bookmarking systems arguably provide support for search activities that range from simple fact-finding to more exploratory or social forms of search. Fact-finding or what is called “known-item” retrieval is supported by traditional application *explicit search* capabilities. Users generate query terms and sift through lists of search results to find the appropriate bookmark (and associated web site). These known-item search tasks are usually characterized by a well understood search problem and reasonable understanding of the search domain.

Known-item retrieval is also supported in social bookmarking applications by *browsing* through collections of one's own (personal) bookmarks, which have been explicitly created, tagged and annotated by end-users. Social bookmarking applications typically allow personal bookmark browsing in one of two ways. The first is by sifting through scrollable pages of bookmarks, and the second is by performing a *tag query* of the collection by clicking on a tag.

Social bookmarking tools also support *exploratory* search activities. In exploratory search, the problem definition is less well structured and the emphasis may be on learning or analysis (Marchionini, 2006). One form of this less goal-oriented browsing found in social bookmarking applications is to browse bookmarks by *time*, enabling end-users to serendipitously follow recent bookmark that they find interesting. A second exploratory browsing strategy supported by social bookmarking applications is to explore *popular* bookmarks, where frequency of bookmarking a specific URL is a simple measure of popularity.

Another particularly interesting form of exploratory search supported by social bookmarking services is where end-users engage in person-centric browsing by clicking on a clickable name and the bookmarks for that person appear. This kind of browsing enables the reputation of the original bookmarker to be considered when viewing the bookmark result. At the same time, this person-centric search allows a form of people sensemaking to occur.

These uses of social bookmarking in exploratory search have been reported in a large-scale study of use in a large global corporation (Millen, Yang, Whittaker & Feinberg, 2007).

## 2. Research Challenges

There are a number of important research challenges for social bookmarking systems. Several are described here:

### 2.1 Adoption and sustained use of social software

If social applications like social bookmarking are to be useful in general information seeking tasks, then it is a necessary prerequisite that the applications are inherently useful and have a strong user base. The extended value of the application lies in the vibrancy of the community. As with any social web application, there are questions about how these kinds of tools are adopted and how communities of use develop. Models of use that inform system designers about different task or role patterns are needed and would enable better application design and point to desirable areas of innovation and new functionality.

### 2.2 Social tag management

The use of social tags are arguably the most novel aspect of social bookmarking applications. Tag recommenders could help increase tag production and help with more efficient bookmark search and exploration. While some work has been done to understand tag and folksonomy development, there remain a number of interesting questions about how to optimize these vocabularies for various search tasks.

### 2.3 Integration of social tagging with traditional search applications

Social bookmarking applications have been integrated with enterprise search with considerable success (Millen et al, 2007). However, the use of social bookmarking to improve both intranet and internet search engines is an area of research that is important and poses significant challenges.

For example, research into novel search algorithms that fully harness the value of social tags to improve search results is needed.

## 3. REFERENCES

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