

UPitt iRiS Lab at iConference 2013 Social Media Expo: Search, Share and Learn the Way You Want

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Introduction

Social context and collaboration are among the important factors that motivate people to learn. Meanwhile, it is known that people learn best from interaction and collaboration with other people (Wlodkowski, 1999). As a matter of fact, people are often engaged in collaboration in workplaces or daily life not only because they need to handle the complexity of the tasks, but also because they can learn and socialize through the process. In information seeking and retrieval environments, when the search task is exploratory, it may be in the searchers' best interests to collaboratively explore the information space and participate in shared learning (White & Roth, 2009). However, it is hard to have a one-size-fits-all system to support people engaged in various collaborative searches and shared learning due to the fact that collaboration can take many forms. Golovchinsky et al. (2008) summarized two types of collaboration among Web users. Implicit collaboration refers to a group of people who share similar search interests; the recommender system suggests items to these people based on the similarity of their interests. The goal is to use information previously found by others to inform new search results. Explicit collaboration, on the other hand, refers to a small group of people who share the same information need and who want to work as a team to engage in searching for information pertinent to the information need.

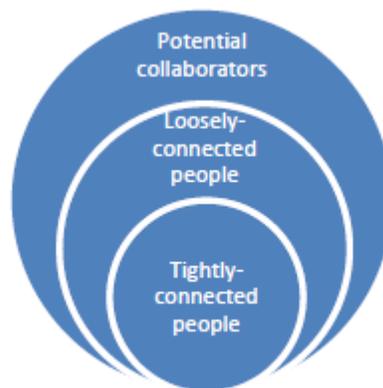


Figure 1: Collaboration in different social circles

People actually interact within different social circles when they engage in different types of collaborations. For instance, explicit collaboration often happens among people who are closely-connected such as family, friends or colleagues because they know each other personally. Implicit collaboration, in contrast, often happens among people who are aware that their results are based in part on data obtained from other users, but they may not know who the identity of the other users or what purpose the users had in mind while searching. We believe that factors such as search task or search context can motivate people to adopt different collaboration styles. Therefore, it is important to provide people with choices of system support so that they have the freedom to select the way they want to

search, share and learn information when interacting within different social circles. Those who are closely-connected may be comfortable using explicit communication and sharing of information, whereas loosely-connected people may garner more benefit by creating and maintaining community resources and collections. It is also important to enable people to reach out and explore potential collaborators. Our goal in this expo is to design a variety of components for our *iRiSer* system to support people's freedom to search, share and learn in their preferred ways when interacting with people from different social circles.

Searching, Sharing and Learning in a Team

Scenario

Students may search as a group for information as part of a collaborative course project; friends may search together to find information to plan a vacation; healthcare providers may collaboratively search for information to diagnose a patient's illness; or family members may collaboratively search on the Web to buy a car. All these scenarios share the same premise: that two or more people have the same information need, and they are working together in the same timeframe to satisfy that need. In other words, people search, share and learn information as a team.

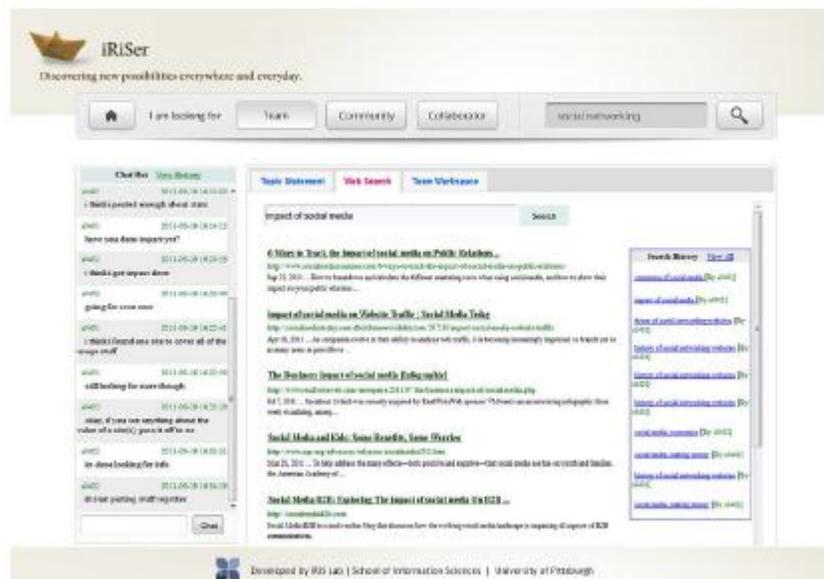


Figure 2: *iRiSer* System Team Component

The Team Component

The team component in our *iRiSer* system is designed to support the aforementioned scenario. As shown in Figure 2, the *iRiSer* system's interface has a left-hand panel dedicated to intra-team communication – the Chat Box, and the main panel is further divided into three frames: topic statement, Web search and team workspace. The topic statement frame contains the description of the task on which the user is currently working. The search frame connects the user's query to Google and displays the Google search results. Users examine search results for relevant information, and can save a whole Web page or a snippet of the page. Users can also see their search history (queries) as well as those of their teammates. The team workspace is designed to facilitate the sharing of relevant search results. Users can click to view more details about an item in the workspace, as well as to comment on or assign tags to any item. Users can also decide whether or not certain items will be visible to other team members. Overall, this component provides the team members with the opportunity for coordinated searching: they have the same topic statement space, they can use IM to coordinate their search process, and they can share search products or learn from each other's activities.

Searching, Sharing and Learning in a Community

Scenario

People in the same community often share similar information needs and interests. For example, residents of the same city may be interested in learning about the local news and events in that city. People in interest-oriented communities, such as those who play the Starcraft computer game, may be attracted to the same new updates to the game. People from the same profession are all interested in the latest breakthroughs and emerging topics in the discipline. However, as individuals in the community, each person can also bring different perspectives to the otherwise homogeneous landscape. This helps to establish the variety inside the community, thus making it interesting and important to characterize the similarities and differences among different people. This provides heterogeneous and rich contextual information for searching, sharing and learning within a community.

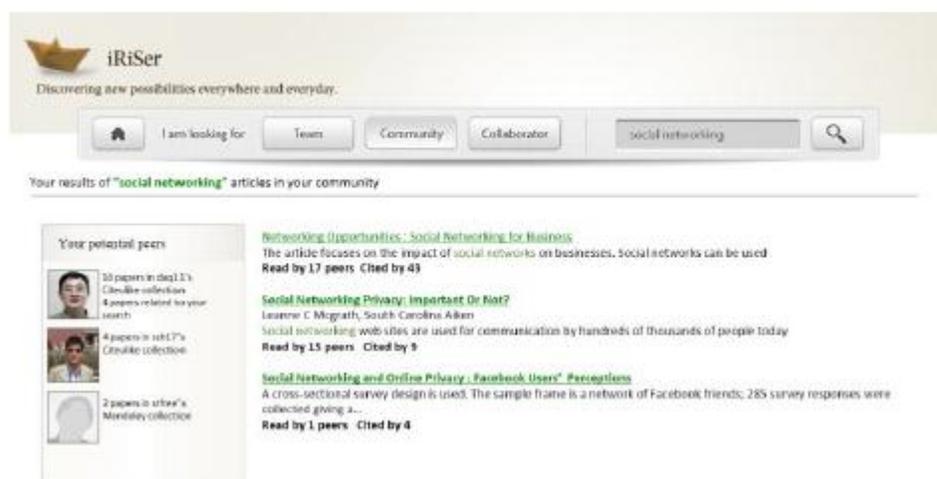


Figure 3. iRiSer System Community Component

The Community Component

The community component in our *iRiSer* system supports the community scenario (See Figure 3). In this component, people's search queries are used to not only match relevant scientific articles, but also to locate online users in social reference management websites (such as Mendeley and CiteULike) with similar interests as well as the authors who write and cite articles in similar topics. Thus, we create a virtual community that contains the users and authors who share the same interests as the searcher. The search results are optimized to consider multi-dimensional relevance criteria including: topical relevance scores, as calculated by matching the queries with article content; community reading interest scores, which measures the extent to which the article can satisfy the interests of this virtual community; and academic publication contribution scores, which measures the likelihood that scientists, when writing articles on similar topics, would cite the article. Considering all of these factors, the system models scientists' information needs by incorporating the contexts of communities in which scientists are interested.

Discovering Potential Collaborator

Scenario

Despite having access to numerous web documents returned by powerful search engines, users on many occasions still feel that it is more important to be connected to the right people (Ackerman, Pipek, & Wulf, 2003). There are various reasons that people seek out new collaborative relationships. For instance, in the academic environment, researchers may want to find a collaborator to work on a cross-

disciplinary project, doctoral candidates may need to find external committee members, and conference program chairs may need to look for committee members. Each of these tasks and contexts may have significant influence on the collaborator discovery process.

The Collaborator Component

The collaborator component we built into our iRiSer system supports the finding of appropriate collaborators. Most searches for people are exploratory in nature, in which the users may only have vague ideas about whom they are seeking. Therefore, it is optimal to model people discovery as an interactive exploratory process, in which the users and the system are engaged in an iterative process of stating the requirements and exploring the returned candidates. Figure 4 reveals the interactive exploration process of finding collaborators for the topic of “digital library”. The default factor is content-based relevance, but the system also incorporates two other factors: authority and social similarity. Authority measures the author’s reputation, which is calculated using PageRank algorithm. Social similarity measures the similarity between candidate and the searcher in a social network. Returned candidates are presented with their names, affiliations, and the scores for each factor. Users can issue queries to define the search topic, adjust the importance of each factor (by sliding its bar to generate updated candidate rankings), and save the relevant candidates in the workspace shown in the right hand panel.

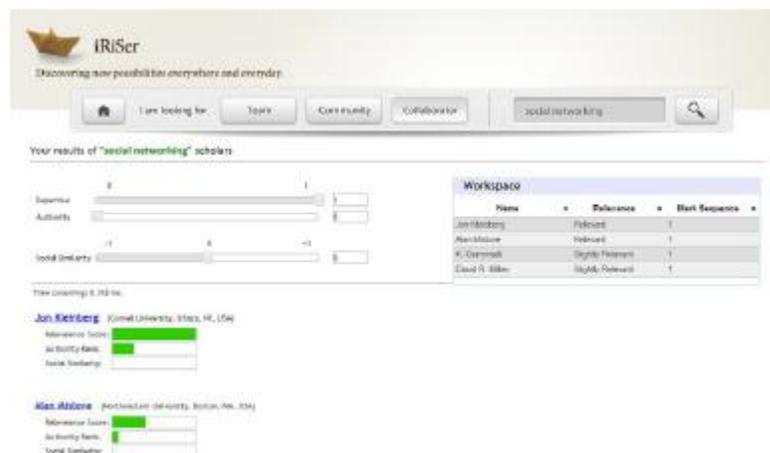


Figure 4. iRiSer System Collaborator Component

Future Work: Integration

Each of the three iRiSer system components described in this paper were developed separately and evaluated in several user studies. There were several critical lessons learned during the studies: our system can support users in different social contexts for exploring a wide range of information spaces, and users are happier and more satisfied because they can socially engage with others rather than working alone. However, we are aware that users’ needs are often multi-faceted and dynamic in nature. Unfortunately, each system component in isolation can only support one such facet or take a static view of people’s social circles and collaboration relationships. Therefore, we are in the process of integrating these components into one seamless service to provide users with the freedom to choose the way they want to search, share and learn information. The two challenges that we face are 1) how to make smooth transitions among different components; and 2) how to automatically discover users’ needs and provide the appropriate support?

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