What is Social Search?

• **Social Information Access**
  – a stream of research that explores methods for organizing users’ past interaction with an information system (known as explicit and implicit *feedback*), in order to provide better access to information to the future users of the system

• **Social Search: a set of techniques focusing on**
  – collecting, processing, and organizing traces of users’ past interaction
  – applying this “community wisdom” in order to improve search-based access to information
Variables Defining Social Search

- Which users?
  - Creators
  - Consumers
- What kind of interaction is considered?
  - Browsing
  - Searching
  - Annotation
  - Tagging
- What kind of search process improvement?
  - Off-line improvement of search engine performance
  - On-line user assistance

The Case of Google PageRank

- Which users?
- Which activity?
- What is affected?
- How it is affected?
- How it improves search?
How Search Could be Changed?

• Let’s classify potential impact by stages

Before search  During search  After search

Improving Search Engine Work

• Search Engine = Crawling + Indexing + Ranking

• Can we improve crawling?

• Can we improving indexing?

• Can we improve ranking?
Improving Indexing

- What is the problem with the classic approach to indexing?
- How indexing can be improved?

Social Indexing: Some Ideas

- Use social data to expand document index (document expansion)
- What we can get from page authors?
  - Anchor text provided on a link to the page
- What we can get from searchers?
  - Page selection in response to the query (Scholer, 2002)
  - Query sequences (Amitay, 2005)
- What we can get from other page visitors?
  - Page annotations (Dmitriev et al., 2006)
  - Page tags (Yanbe, 2007)
Improving Search Engine Ranking

- What we can get from page authors?
  - Links (Page Rank)
- What we can get from searchers?
  - Page selection in response to the query (DirectHit)
- What we can get from page visitors?
  - Page tags (Yanbe, 2007; Bao, 2007)
  - Page annotations
  - Page visit count
- Combined approaches
  - PageRate (Zhu, 2001), (Agichtein, 2006)

How We Can Help Before Search?

- Query checking - now standard
- Suggesting related queries
  - How it can be done?
  - Example: query networks (Glance, 2001)
- Query refinement and query expansion
  - Using past queries and query sequences - what the user is really looking for (Fitzpatrick, 1997; Billerbeck, 2003; Huang, 2003)
  - Using anchors (Kraft, 2004)
  - Using annotations, tags
How We Can Help After Search?

- Better ranking (re-ranking)
  - Link ordering
- Suggesting additional sources
  - Link generation
- Annotating results
  - Link annotation
- Post-search system can provide better help by using more data

Some Advanced Approaches

- Improving precision by considering more similar users
  - “Quest” approach
  - Community-based search
  - Combining community-based search and navigation
- Adjusting the precision to the quality of data
  - Site-level recommendation
AntWorld

“Quest” Approach

- Quests establish similarities between users
- Relevance between documents and quests is provided by explicit feedback
- Similar approach: SERF (Jung, 2004)
  - Results with recommendations were shown on over 40% searches.
  - In about 40% of cases the users clicked and 71.6% of these clicks were on recommended links! If only Google results are shown users clicked in only 24.4% of cases
  - The length of the session is significantly shorter (1.6 vs 2.2) when recommendations are shown
  - Ratings of the first visited document are higher if it was recommended (so, appeal and quality both better)
Quest-Based Approach

- What is good/important?

- Critique?

I-SPY: Community-Based Search
I-SPY: Mechanism

- User similarity defined by communities and queries
- Result selection provide implicit feedback

I-Spy: Proxy Version

![Google Search](http://www.google.com)
I-Spy Approach

- What is good/important?

- Critique?

Social Search + Social Navigation

ASSIST Architecture


Site-Level Search: Social Ways

Site-level search

- What Kinds of Social Wisdom?

- How Social Wisdom is Used?

Reading for next class

- Social Navigation
  1. Footprints: history-rich tools for information foraging (http://www.citeulike.org/user/brusilovsky/article/518781)

- Social Search