

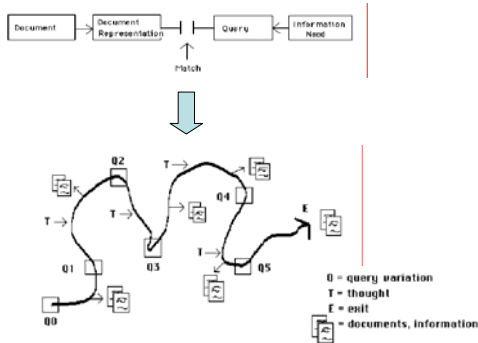
Browsing and Interaction

Information Storage and Retrieval
LBSC 878, Week 6
14 March 2005

Aims of Discussion

- To get us thinking about:
 - interaction with search systems
 - What is browsing?
 - Facilitates knowledge discovery and serendipity
 - Reduces the importance of the Matching components discussed in Week 5
 - What about directed searching? How is this different from browsing?
 - Are the other styles of interaction?
 - the purpose of interaction
 - principles for the design of search interfaces

Berrypicking/Evolving Searches



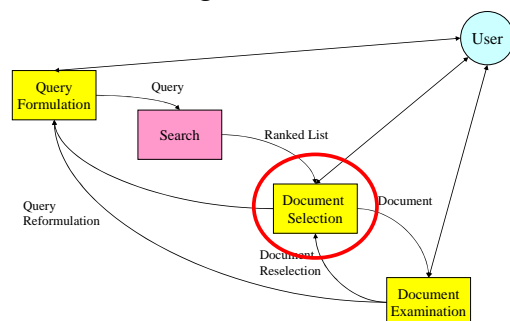
Interface Design Principles

- **Providing** informative feedback
 - Relationships: Q to D, D to D and D to metadata
- **Permitting** easy reversal of actions
- **Supporting** an internal locus of control
- **Reducing** working memory
 - Keep track of decisions made, browsable relevant info
- **Providing** alternative interfaces for novice and expert users

What is important to you?

- Some examples:
 - is easily learned
 - helps convey the structure of knowledge in the field,
 - is fast enough to permit rapid iteration,
 - supports within-document navigation
- Others?

Browsing Retrieved Set



Indicative vs. Informative

- Terms often applied to document abstracts
 - Indicative abstracts support selection
 - They describe the contents of a document
 - Informative abstracts support understanding
 - They summarize the contents of a document
- Applies to any information presentation
 - Presented for indicative or informative purposes

User's Browsing Goals

- Identify documents for some form of delivery
 - An indicative purpose
- Query Enrichment
 - Relevance feedback (indicative)
 - User designates “more like this” documents
 - System adds terms from those documents to the query
 - Manual reformulation (informative)
 - Better approximation of visceral information need

System's Goals

- Assist the user to
 - Identify relevant documents
 - Identify potential useful terms
 - for clarifying the right information need
 - for generating better queries

Checkpoint 1

- How do we determine whether systems meet these goals?
- Do precision and recall really capture it?
- If not, what else do we need to use?
 - User satisfaction? Time to learn?
- How were ideas evaluated in the papers we read this week?

A Selection Interface Taxonomy

- One dimensional lists
 - Content: title, source, date, summary, ratings, ...
 - Order: retrieval status value, date, alphabetic, ...
 - Size: scrolling, specified number, RSV threshold
- Two dimensional displays
 - Construction: clustering, starfields, projection
 - Navigation: jump, pan, zoom
- Three dimensional displays
 - Contour maps, fishtank VR, immersive VR

Google's KWIC Summary

Query: University of Maryland College Park

[The University of Maryland](#)
... [University of Maryland, College Park](#), MD 20742, USA, 301.405.1000 Copyright 2003
[University of Maryland](#) Contact us with comments, questions and feedback.
Description: Official web site of the [University of Maryland](#) located in [College Park, Maryland](#). Offers student, ...
Category: [Reference > Education > ... > College Park](#)
[www.umd.edu/ - 12k - Mar 5, 2004 - Cached - Similar pages](#)

[inform@Maryland](#)
... Welcome to [inform@Maryland](#), one of the web hosting resources and services provided to the [University of Maryland](#) by the Office of Information Technology (OIT) ...
Description: The campus-wide information server for the [University of Maryland](#). Offers a wide variety of information...
Category: [Reference > Education > ... > College Park](#)
[www.inform.umd.edu/ - 8k - Mar 5, 2004 - Cached - Similar pages](#)

[Department of Computer Science](#)
... at the [University of Maryland](#), will be ... of Google, has received the university's Outstanding Young ... Solutions, has received the college's Distinguished Alumnus ...
Description: Offers BS, MS, and Ph.D. degrees in computer science. Research interests include artificial intelligence...
Category: [Computers > Computer Science > ... > United States > Maryland](#)
[www.cs.umd.edu/ - 34k - Mar 5, 2004 - Cached - Similar pages](#)

Teoma's Query Refine Suggestions

The screenshot shows the Teoma search engine interface. The search query is "University of Maryland". The results page includes a list of search results with titles and snippets. A "Refine" sidebar on the right offers filters such as "Department", "School", "Faculty and Staff", "Location", and "Language". The interface is clean and functional, typical of early search engines.

Vivisimo's Clustering Results

The screenshot shows the Vivisimo search engine interface. The search query is "University of Maryland". The results are displayed in a list format. A prominent yellow highlight is placed over the first result, "University of Maryland". Below the main results, there is a section titled "Related Books" with a list of links and brief descriptions. The interface is modern and visually appealing.

Kartoo's Cluster Visualization

The screenshot shows the Kartoo search engine interface. The search query is "University of Maryland". The results are visualized as a network of interconnected nodes, each representing a search result. The nodes are connected by lines, forming a complex web. The interface is colorful and visually engaging.

Starfield Displays/Dynamic Queries

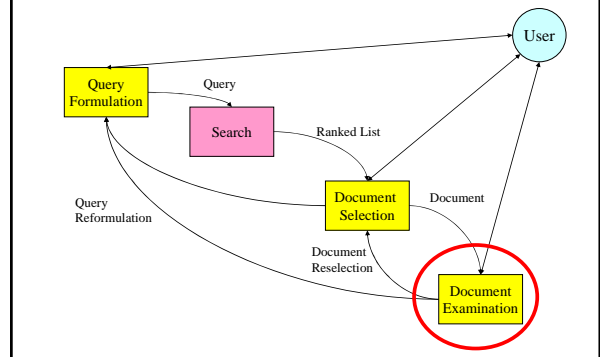
The screenshot shows the Starfield search engine interface. The search query is "University of Maryland". The results are visualized as a starfield of colored dots. A detailed view of a movie, "Witches of Eastwick", is shown, including its title, director, year, country, language, and cast. The interface is visually rich and interactive.

ThemeView

The screenshot shows the ThemeView search engine interface. The search query is "University of Maryland". The results are visualized as a 3D landscape with a color gradient from blue to red. The landscape is composed of many small, interconnected nodes. The interface is visually striking and unique.

Credit to: Pacific Northwest National Laboratory

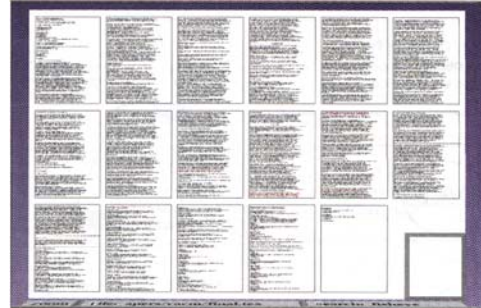
Browsing Retrieved Set



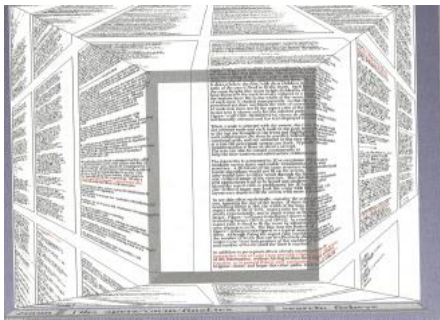
Full-Text Examination Interfaces

- Most use scroll and/or jump navigation
 - Some experiments with zooming
- Long documents need special features
 - “Best passage” function helps users get started
 - Overlapping 300 word passages work well
 - “Next search term” function facilitates browsing
- Integrated functions for relevance feedback
 - Passage selection, query term weighting, ...

A Long Document

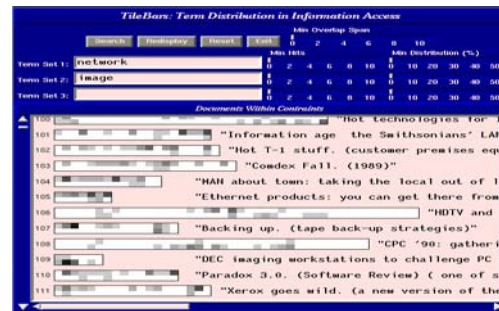


Document lens



Robertson & Mackinlay, UIST'93, Atlanta, 1993

TileBar



[Hearst et al 95]

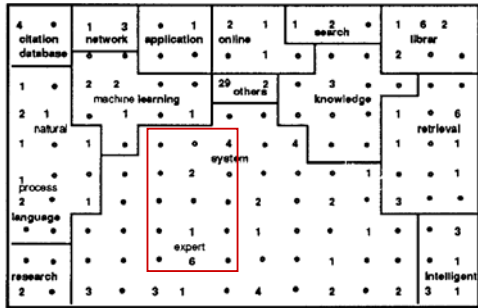
Top-Ranking Sentences



Semantic Maps

- 1993 CLIS Ph.D. dissertation
- Region labeling challenge in 2-D plots
- Point labeling advantage of 1D lists
- Influence on subsequent research
 - PNL Themescape/Themereview (1995), <http://www.pnl.gov/infviz/technologies.html>
 - Sandia Vx-Insight (1996), <http://www.cs.sandia.gov/projects/VxInsight.html>
 - Arizona ET-MAP (1998), <http://ai.eller.arizona.edu/research/dl/etmapdemo.htm>

Semantic Maps



Ostensive Browser



| Interface | Provide informative feedback | Permit easy reversal of actions | Support internal locus of control | Reduce working memory load | Provide alternate interfaces for novice and expert users |
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Checkpoint 2

- Browsing is dependent on knowledge about the structure of the collection
 - Must know how to navigate between documents
 - Is browsing typical of particular types of search?
 - Fact searches, decision searches, background information searches
 - Berrypicking searches
 - Ostensive browsing – ‘forced’ browsing

| Interface | | | | | |
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Things That Help

- Show the query in the selection interface
 - It provides context for the display
- Explain what the system has done
 - It is hard to control a tool you don’t understand
 - Highlight search terms, for example
- Complement what the system has done
 - Users add value by doing things the system can’t
 - Expose the information users need to judge utility

Things to think about

- Browsing
 - not the same as directed searching
 - more appropriate for less well-defined needs or users unfamiliar with the collection
 - dependent on provision of navigational aids
 - Links to documents and between documents, an overview of documents
 - facilitates information need development, serendipity and learning