Zoomable User Interface for In-Depth Reading

Eric Bier, Kris Popat, Lance Good
Palo Alto Research Center
3333 Coyote Hill Road
Palo Alto, CA 94304
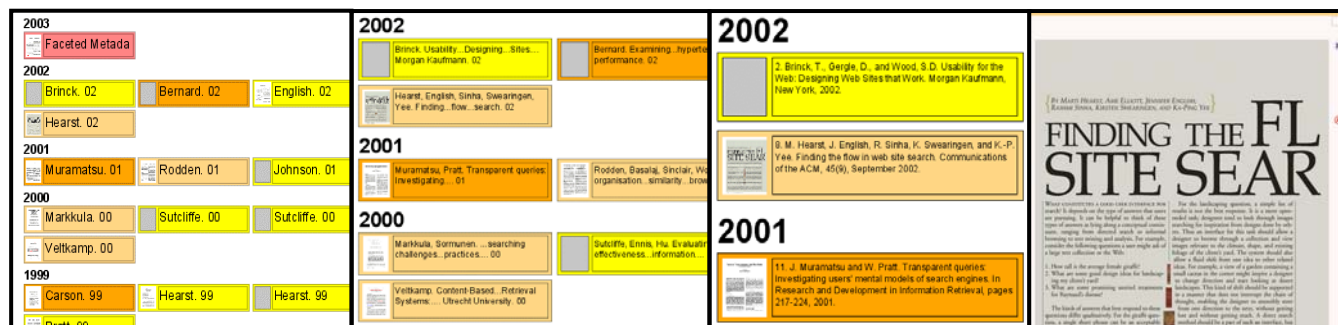650-812-4000

{bier, popat, good}@parc.com

Alan Newberger
UC Berkeley
387 Soda Hall
Berkeley, CA 94720
510-643-0943

alann@eecs.berkeley.edu

ABSTRACT

The Instant Bookplex system includes a zoomable user interface (ZUI) for navigating through a spatial representation of a document collection. This ZUI supports extended reading in the collection using semantic zooming, graphical presentation of metadata, animated transitions, and an integrated reading tool. It helps users find and re-find documents, choose good documents to read next, and navigate between documents.

Categories and Subject Descriptors

H.5.2 [**Information Interfaces and Presentation**]: User Interfaces – *graphical user interfaces.*

General Terms

Algorithms, Design, Human Factors.

1. INTRODUCTION

In-depth reading on a topic may require reading many articles over a period of days. Such reading can be improved with software tools that address its specific challenges. In particular, a person engaged in in-depth reading needs good ways to assemble relevant documents, choose a reading order, find each document when needed, transition between articles to compare them, and track what has already been read and what is yet to be read.

Our system, Instant Bookplex (IB) [1], addresses these challenges. IB uses interactive Web mining techniques to help the user build up a document collection on a topic, and provides a zoomable user interface (ZUI) that can be used throughout a long-term reading project to find and re-find the best documents to read next, to read them on-screen, and to track reading progress.

2. INSTANT BOOKPLEX

IB extends the UPLib personal digital library [1]. To assemble a documents on a topic, the user adds *seed documents* to UPLib and

then grows the collection by choosing and adding documents cited by the seed documents, documents cited by *those* documents and so on. IB tools automatically extract citations from documents and automatically find online copies of the cited documents where possible. The collection is called a *bookplex* (coined by Stuart Card to indicate a book together with all of the documents to which it refers out to one or more generations).

The user navigates and reads the collection using our ZUI, in which each document is represented by a colored rectangle that includes both a page image of the document and a citation for it. These rectangles are called TATs (Thumbnail And Text). TATs are grouped along metadata axes such as date of publication, author, or conference name. Each TAT group is laid out like the words in this paragraph, where wrapping is used to keep the TATs within a fixed column. At zoom factors where a TAT must display itself in a small space, semantic zooming is used to reduce the amount of displayed citation text, while preserving a usable font size, as shown in Figure 1. The hue of each TAT shows how highly the user has ranked that document. Color saturation indicates how much of it has been read. So the user sees at a glance where to find highest-ranked unread documents. The user can zoom into any document by clicking on its page image and read it in place using integrated page-turning widgets.

Animated transitions are used in the ZUI to aid the user in forming spatial memories of important groups of documents. The document thumbnail in each TAT shows whatever page the user was last reading. Thus, the user can go back and forth quickly between relevant pages of several documents.

3. REFERENCES

[1] E. Bier, L. Good, K. Popat, and A. Newberger. A document corpus browser for in-depth reading. *Proceedings of the Joint Conference on Digital Libraries*, 2004.

[2] W. Janssen and K. Popat. UpLib: a universal personal digital library system. *Proceedings of the 2003 ACM symposium on Document Engineering*, pages 234-242.