

# Browsing Affordance Designs for the Human-Centered Computing Education Digital Library

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## ABSTRACT

Browsing is a widespread user behavior in the digital library (DL) environment; there are an array of existing techniques that afford browsing and are readily applicable to digital libraries. We outline the designs of two such methods based on well-known techniques: treemaps and ScentTrails.

## Categories and Subject Descriptors

H.5.4 [Hypertext/Hypermedia]: User issues

## General Terms

Design, Human Factors.

## Keywords

Digital libraries, education, browsing, treemap, ScentTrails.

## 1. INTRODUCTION

Browsing is widely considered to be one of the more fundamental user behavior patterns in the context of educational digital library use. However, most existing systems (with exceptions [1]) afford browsing behaviors at best by hierarchical classifications; other libraries only include support for behaviors that are not user-centric (e.g., browsing an entire repository by document title). But there are a variety of existing techniques that are easily adaptable to the DL domain. This abstract summarizes two designs that use existing methods to improve DL browsing; we use our Human-Centered Computing Education Digital Library (HCC EDL: <http://hcc.cc.gatech.edu>) as a representative platform.

## 2. BROWSING AFFORDANCES

### 2.1 Interleaving Searching and Browsing

Researchers have often discussed the intuitive division of information seeking activity into *searching* and *browsing*. Users commonly seek to interleave these behaviors, but their integration is often problematic. ScentTrails are a method of overlaying search-style data within a standard web browser display [3]. It uses an *a priori* ‘information scent conduit matrix’ and relevance scores (e.g., from a search engine) to indicate which links on a given page get the user closest to relevant documents; it signifies that information via browsing cues like link color or text size.

The DL environment is well-suited to the ScentTrails approach:

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DLs are a controlled environment with robust metadata and search facilities. ScentTrails’ attributes are also compelling: a system that directs users to relevant *areas* of a library (rather than specific resources) permits serendipitous access and reduces the cost of search/browse task switching.

### 2.2 Repository Visualization

It can be difficult for users to discern characteristics of an entire DL collection. Repositories commonly highlight the overall purpose or size of a collection, but other traits are often relevant yet less evident: the distribution of contents or content types across different parts of a hierarchical classification, for example. Library visualization can make these data more evident. Visualization can also flatten the browsing process by providing direct access to a broad and deep swath of a hierarchy, instead of showing users only a small portion of it at any one time.

The *treemap* visualization [2] is a space-filling representation of arbitrary tree structures. Its properties make it a good candidate for use with DLs, since many libraries already classify documents into hierarchical structures. Treemaps scale well with tree size, provide a compact view of all levels of a hierarchy, and provide a scannable overview of the repository characteristics encoded in the mapping. Our prototype designs use color to represent content type. The size of the leaf nodes can be constant (showing the relative density of different sections of the repository) or encode access or rating data to emphasize popular or useful sections or documents.

## 3. FUTURE WORK

We are in the early development stages in both of these projects; formative evaluations of our prototypes are necessary to gauge their potential effectiveness in advance of full deployments. Beyond these specific designs, we hope to demonstrate that these and other methods represent improved, low-overhead (in terms of time, resources, etc.) means for DL designers to support browsing behaviors.

## 4. REFERENCES

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