

## 1 Project Overview and Motivation

When navigating various branches of links, web browsers lack a good representation of the pages a user has traversed. Existing web browsers have history “lists” which are really just stacks that reorder, remove, or replicate page titles when a user pursues multiple avenues of navigation using the forward and back buttons. The well-traveled internet user finds it cumbersome to locate specific pages that were not viewed recently and that may have poor titles using these lists.

Our concept is to create an interface within an existing web browser that allows easy re-visitation of pages or series of pages using a map reflecting the users actual paths or lines of investigation through the Internet. The interface is to represent pages, their interrelationships, and contextual significance utilizing a variety of possible attributes such as: spatial arrangement, shape, size, summaries, thumbnails, iconic assignment, color, first image in-lined in document, background image/color, site icon (recent technology that uses .ico files) and titles.

## 2 Nature of Users

Our primary audience:

- is open to enhancing information organization and retrieval using the History
- spends a significant amount of time using—and filtering through—lots of information
- does not use the Internet to access the same familiar website(s) every session
- would benefit having an aid to organize previous productive searches and prevent redoing searches
- may or may not use tabs for interesting pages (Our history enhancement would also benefit novice users, as they would not tend to use tabs, but have learned to conceptualize history.)

## 3 Interface Tasks

Be it shopping, academic, or interest-related, all History interface tasks are research-oriented. That is, all representations are geared toward making information in the History easily accessible through a variety of cataloguing and visualization methods.

Users know key pieces of information about websites they have visited, and they should be able to find their desired sites quickly thorough their Histories. But, current browser History interfaces frustrate users with the gulf of execution, significantly constraining users since their knowledge does not map to the affordances of current History interfaces.

## 4 Contexts of Use

All contexts of use are relevant, with varying degrees of impact. That is, all subjects are relevant and the extent to which the user can make use of the interface is most significant.

When users try to find an infrequently viewed page they visited recently, we hypothesize that they tend to simply “re-Google” with the same search term and use the same “finding” process with increased confidence in results. We want the process of locating the desired site in the History to be easier/faster than “re-Googleing.”

Tab-based browsing. Tab users put a tab up for everything they find that may have value.

## 5 Users

Robert Chin, Senior in CS, expert MacOS X user; Jason Laska, Junior in ECE, very competent MacOS X user; David Stecher, Junior in ME, very interested in good design - Mac user not especially advanced. Kristin, 15 year old, parental approval but pending personal consent, uses Internet Explorer on 9.x. Digs local music scene and frequents openingbands.com and local bands' sites.

## 6 Existing Solutions to the Problem

The current solution to composing a History is a broad chronological categorization, wherein individual pages visited are identified by title.

Titles are primarily taken from the source code of websites and are not very informative, as web designers do not always compose titles with the History in mind. If the web designer neglects to include a title, the page is identified by a generic title (e.g. “Browser Page 1”) or its URL. Pages within a site may have the same title, which leads to distinct content with indistinguishable identifiers.

Pages with frames also pose a problem to existing solutions. The content is divided into several distinct pieces, best represented visually—but current Histories do not take advantage of this.

Pages are presently categorized according to date visited, but finer granularity in time period categorization is not implemented. There are no further descriptions, such as text summaries or thumbnails for quick visual identification. “Burst browsing”—or doing all research in one sitting—isn’t represented especially well by these dates, but is represented significantly better compared to sporadic research.

See the “Figures” section 10 for illustrations of these points.

Several interfaces have been proposed in the research arena that try to solve the problem, or may be useful to us in consideration of details for our solution. MosaicG, PadPrints, WebMap, and WebPath have attempted to represent the history using flowchart, zoomable, and 3D interfaces respectively. Lastly, a Thesis proposal called Segue at MIT media lab proposes an interface that extrapolates recent browsing history knowledge into ‘skeins’ and communicates the skeins through intersecting key words over the time of browsing.

## 7 Focus and Strengths

Standard consumer web browsers need not have very many features. We feel that a well-designed History is a useful and desirable feature. A perfect History feature would allow a user to quickly travel to any visited

site simply by knowing something (anything really) about that site (content, URL, date visited, banner ad at top....) and it wouldn't matter if the overall context of some browsing was correlated to being done all at once or over the period of a week. Clearly it is impossible to implement a perfect History, but all History functions should try to attain this ideal. We are not changing the goal of the History feature; we are simply redesigning the functionality of it. Most of the current implementations of Histories do not even come close to achieving the perfect History. Our focus is narrow in scope, yet thorough with wide deployment. We are tackling a relatively small problem for just one user, but a large issue for everyone. At some dimension, it's akin to valuing the level of concern Microsoft should have put into the Start button. We will try to come up with a very intuitive and useful solution.

Our group consists of members with diverse backgrounds. Two members are Psych/CS double majors who have some exposure to cognitive psychology and interface/interaction design. One CS/LIS double major and one CS major. 3 are Mac users themselves, one is not. One has experience with programming applications with actual interfaces on Mac, two want that experience.

Often with actual industry situations the programmers are resistant to designers "telling them what to do." It is very difficult for one person to be both a developer and a designer at the same time, it's easy for the programmer to feel attachment to the code rather than the needs of the user—who is paramount. Thus, at least one of our group members will not have any part in writing code (even though we are all CS majors). Our project will require a significant technical investment in Macintosh programming. As such, it is imperative to have skilled, technical developers to turn great ideas into great programs. We have developer members with varying degrees of experience in software development.

## 8 Tools and Environments

Mac OS X; Cocoa in Objective-C; the Apple Safari Backend (Webcore) and other OS X API's.

## 9 User Visits

**specific goals** — In determining the specific functionality to implement in our 'sweetened bread-crumbs' History, we've assumed various desires of users. For example, given an easier method of finding past sites, we've assumed users will prefer to use a built-in browser function to locate previous sites over sites they could also re-find by doing a Google search. The primary goals of the user visits will be to better characterize the goal-objective-action process in which users choose to 1) use Histories as they are currently implemented by their favorite browsers or 2) retrieve previously visited information via other means.

**approaches** — In order to minimize the frustrations posed by unfamiliar interfaces/OS's, our users are those that tend to use the MacOS. We don't want to throw the MacOS at a Windows user. We believe our interface can be appreciated by most potential users; as such, our user set has varying levels and angles to their computer skills.

**people** — Robert Chin, Jason Laska, David Stecher

**dates** — Within the next week or so

**times** — TBD

**script/scenario** — A possible scenario consists of a team member sitting down with a user in front of a computer at which the user feels at his or her most comfortable. The user would then be asked to find

many sites over the course of the visit. In order to build up a lengthy history of sites that would not be easily remembered, it's important to direct the user to find sites on esoteric subjects and to stretch the time spent on-line, to give the user time to forget, perhaps by having the user take a break and/or fill out some kind of questionnaire in the middle of the session.

Instead of finding sites on a variety of esoteric subjects, History muddle can be created by building a History with a majority of pages concerning the same topic—but now how does the user find the specific page he wants? To direct the user to build a History in this manner, we can pose a question such as: “pretend you want to buy an Mp3 player—research iPod and Archos Jukebox.”

After a History has been compiled, the user will be asked to go back to a previously visited page, such as a specific vendor's pricelist in the Mp3 player example above. This request will be posed in a variety of ways. For example, after the user has foraged through Froogle, Pricewatch, Dealnews, Amazon, etc., ask to go back to the thing they “found first” or “the site that had the really good vendor comparisons”—don't necessarily mention “go back to that player you found through Froogle that was on special” right away as that might modify their thought process of whether to use Froogle again or History.

In order to get a true feel for the user's attitude toward the History, we will not tell him/her the full scope of the project.

## 10 Figures



Figure 1: Safari. Dynamic web-pages and lazy web designers produce identical and unnavigable histories.

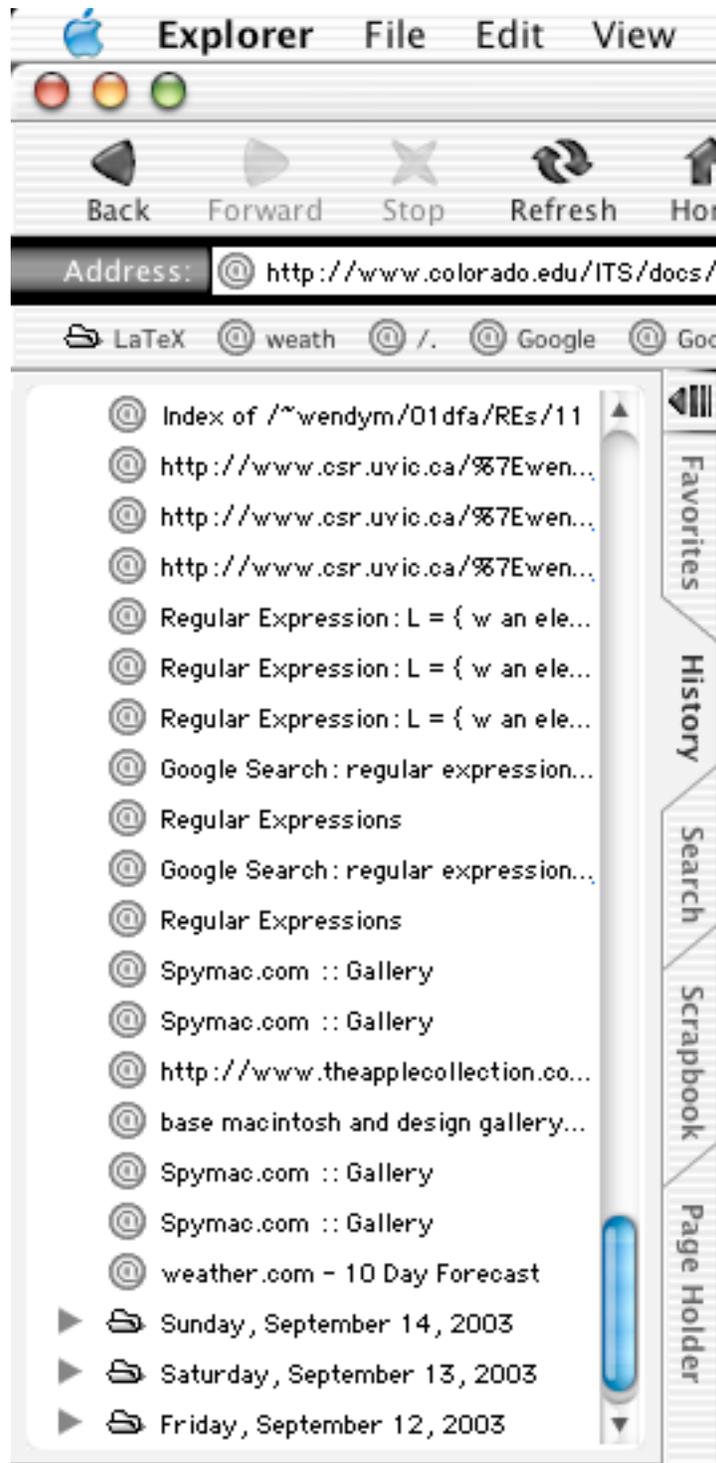


Figure 2: Internet Explorer History. Pages without titles are displayed with URL's that are too long to be distinguishable in this small window.

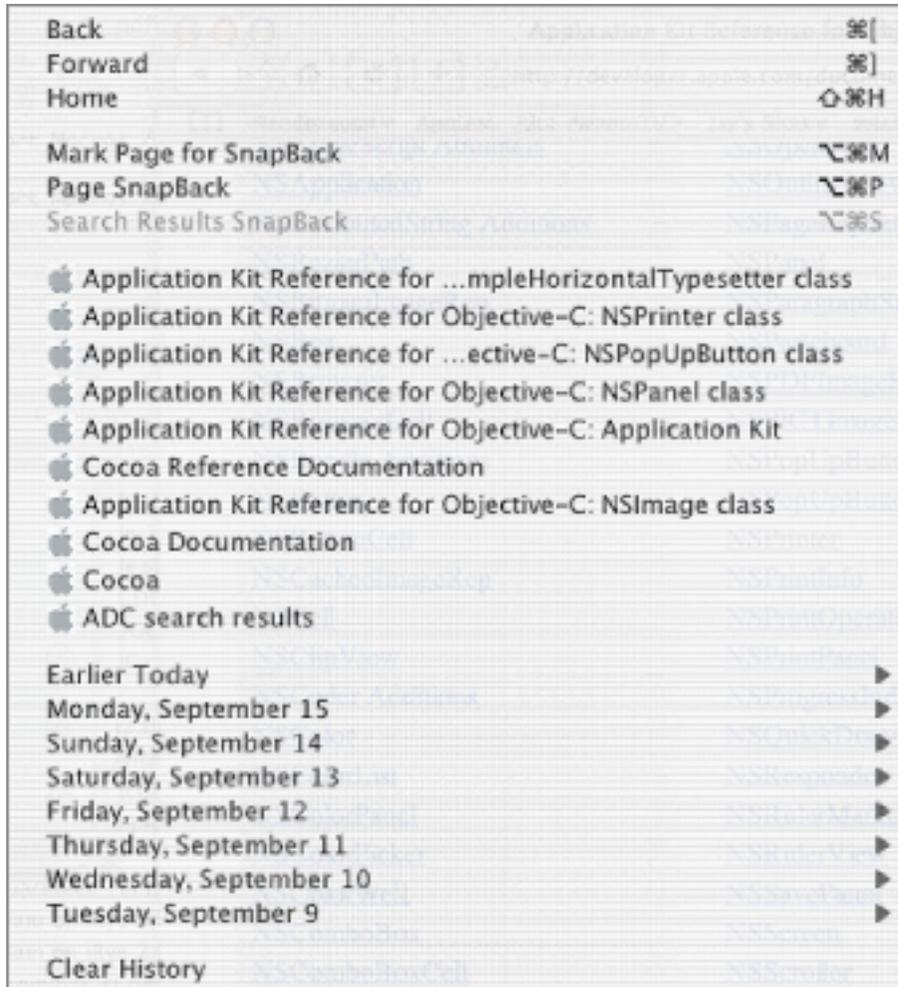


Figure 3: Safari. Even page titles that contain bread-crums become less useful when they are too long to be displayed in a history menu.

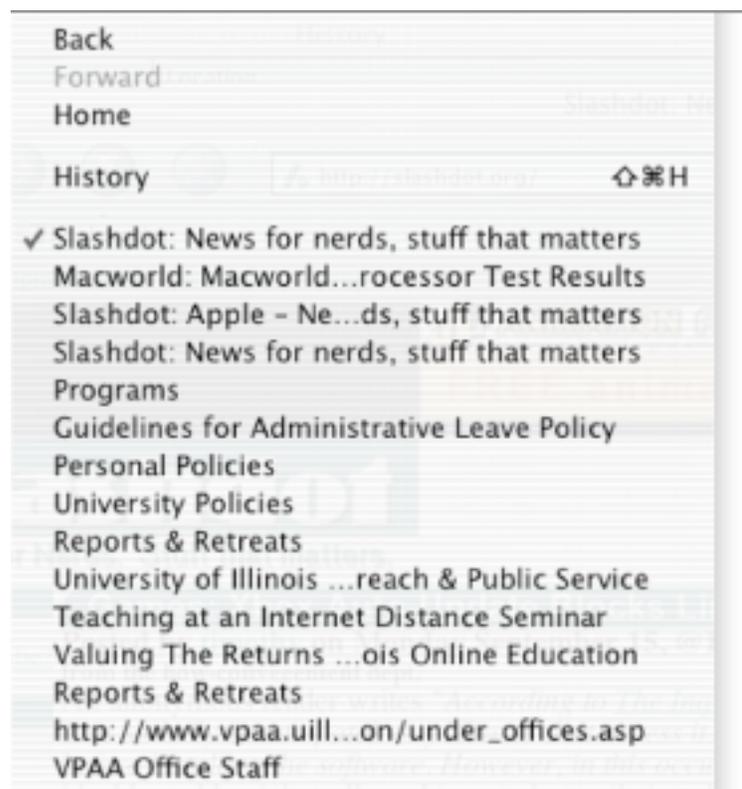


Figure 4: Mozilla History. This menu only displays the most recent history. However, if the user hits the back button several times it essentially erases this displayed history.

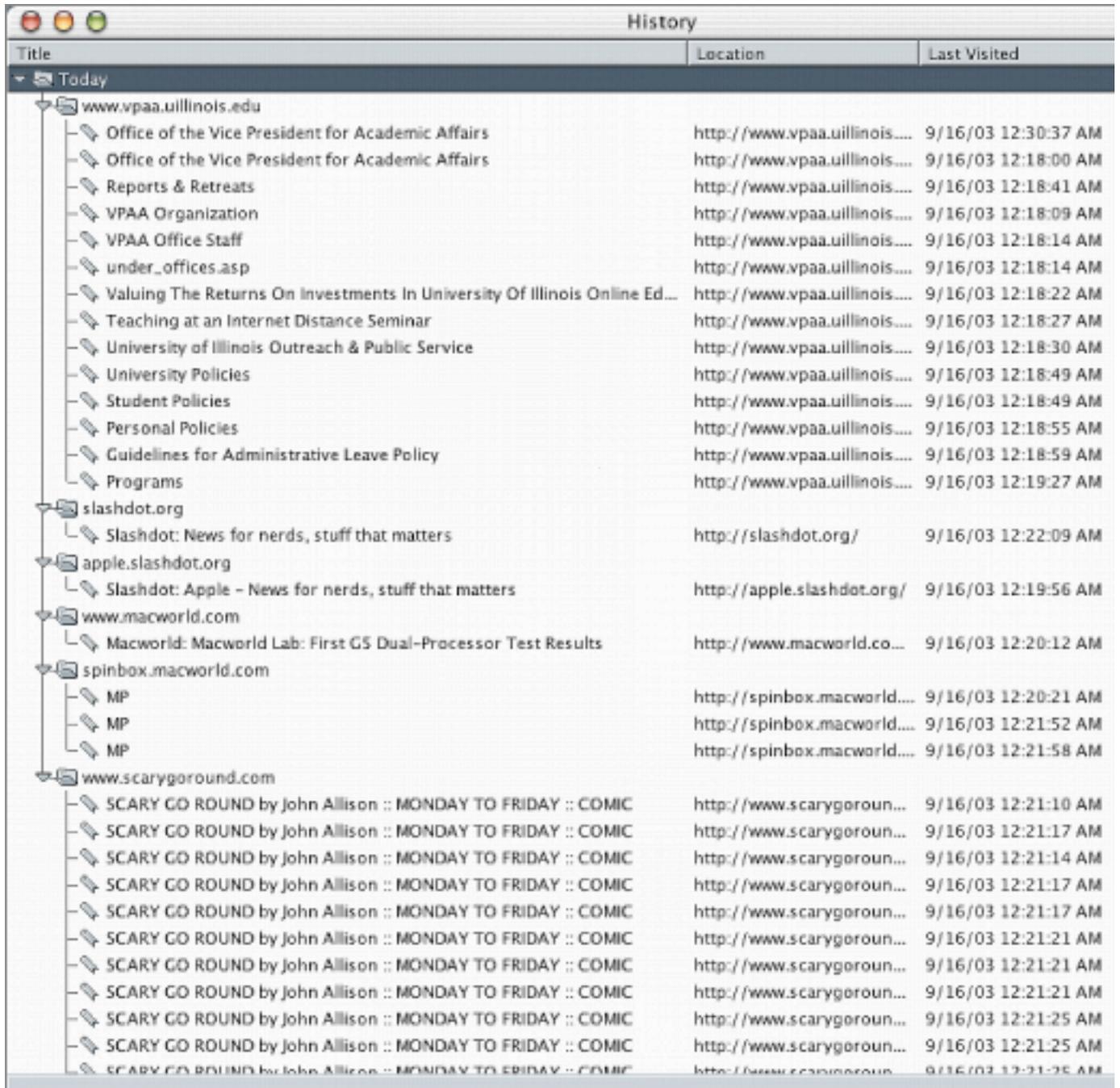


Figure 5: Mozilla. The history window shows the browser's entire history and abandons complete chronological sorting by adding some locational groupings. This helps contextualize some subject relative page titles, but does little to help pages with identical titles.