Summary

We evaluated how three different types of users re-find information contained somewhere in pages they have previously visited. Depending on the quality of a page design, as well as a task's particular significance to a user, there can be varying levels of memory ability to recall the descriptive information necessary for input to using the History, regoogling, retracing link clicks, etc. Some of the users' actions from the studies nicely exhibit the tendency to prefer recognition over recall.

Characterization of Users

Jaska is a junior in Electrical and Computer Engineering, also 20 years old. Jaska has a Powerbook laptop running MacOS X and is rarely seen without his computer. His browser of choice is Camino v.7 (which is a Mozilla variant) because it's fast. Jaska takes pride and joy in knowing the inner workings of his machine and the programs that he runs. He likes coding in assembly because of the challenge and direct mapping to the hardware. Jaska need not have a purpose to use his computer. He often will download applications simply to 'play' around with them, even if he has no intention of ever using them.

Dave is a junior in Mechanical Engineering. He is 20 years old. He is very aware of and frustrated by bad design in the world. He uses an iMac running MacOS X. For a browser, Dave uses is Chimera v.4 (Later versions are known as Camino) because he likes that it is simple. Dave has no desire to be a competent computer user but must use his computer daily due to the importance of email on campus and the large amount of computer- and internet-based homework given in his classes. Dave has no desire to understand how computers work or to see the source code for any program. Dave wants to be able to get what he needs from the computer as quickly as possible with as little effort as possible and then be free to do other things.

Kristin is a 15 year old high school Sophomore. She has a huge interest in local music (punk/aggresive rock). She has used her family's iMac for about three years and uses it now primarily to download mp3's, read and post to music-site message boards, sometimes chat online with friends, and as necessary conduct research for school on the web. Kristin often checks out openingbands.com and mp3.com for news and new message board posts. If she's looking into music and the information isn't on mp3.com or openingsbands.com, she is very apt to use Google. Kristin performs her routine tasks proficiently, but does not have an understanding beyond the routine. Nor does she desire to know any more than she need to. Her family's iMac runs MacOS 9.1 and they use Internet Explorer.

User Visit Planning and Process

The primary use of a History feature is to revisit a page that the user may not have the foresight to bookmark. This allows a user who has found some information online to find it again, in case the user has forgotten important details about it (ie. URL, exact Google search term, name of article). We decided that since memory plays a large role in History usage we needed to meet with Dave and Jaska twice: first to prime with sites and then to recall. We were unable to schedule with Kristin early enough to meet twice, so instead of using customized tasks, we used hers; we had her pull up pages for class that she'd gone to, and also looked at the task of going back to something seen in the past hour.

Dave and Jaska

In the first session, priming, we recorded the exact sites that they traveled to given tasks to find a variety of information; during the second session we tested how they decided to retrieve the same information at a later time. Dave had 48 hours between the two sessions while Jaska had only 24 hours. Ideally, there would have been at least 48 hours between tests for both users, but scheduling two sessions on such short notice did not allow for this.

In the first session, we had Dave and Jaska complete three customized tasks of varying personal interest to Dave and Jaska. The first was to go to slashdot.org and to spend about ten minutes reading any interesting articles and clicking on any interesting links. The second task was to compare prices to create 20 custom T-shirts as if users were going to compile a price comparison sheet for the treasurer of a club. The final task was to have the users find more information on a given current event. For Dave's session the current event that we had prepared to ask was so obscure that we could not even find it again having read the entire article in advance, so that part of the session gave no useful information. When we met with Jaska for his first session, we chose a more significant current event that gave us much better results: three U.S. soldiers had been killed and the story was on many new sites but was not the main headline.

In the second session, we asked the users to recall specific detailed information that had been in articles that they spent the most time reading on slashdot.org. We then gave Dave and Jaska a scenario where the T-shirt pricing information that they had supposedly compiled was inexplicably destroyed or lost and they needed to complete the task again. Finally, we asked Jaska the names of the three soldiers killed in Iraq the previous day. We then tested the users ability to navigate to certain places on the uiuc.edu webpage that we were sure they had been to before. We first asked them to go to Gradcheck and then to the official Grade and Registration Information page.

Kristin

We began the session by spending a few minutes talking about Kristin's music interests and her school work, how she uses her computer and for what, characterizing her browsing habits for context for the rest of the session. In our opening conversation, we found out that she had recently done a school report on the photographer James P. Blair, solely using web resources, which led us to her first task: show us the sites she had used for her report (using sites visited before our arrival in some sense compensates for the fact that we did not visit Kristin twice, as Dave and Jaska were visited; in a way Kristin has already primed herself). Kristin used two sites for her project. She recalled the domain of one of the sites, whose index page lists links to various photographers. Clicking on the link for James P. Blair leads to the specific site Kristin used. She did not remember the URL for the second site so she went to google.com, typed in "James P. Blair" and then located the second site she used by its title, recognizing the unique name.

The second task was: "Name a favorite band. Now to go a site which archives music news (if you can't think of one, try to find one). Find an article on the band you chose, preferably one more than a couple paragraphs in length." Kristin chose Nine Inch Nails. She went to google.com and typed in "Nine Inch Nails." Of the results, the summary linked to MTV caught her eye, and she clicked on that link, trusting in MTV as a ready source of music information. The news features section on MTV's Nine Inch Nails page was not satisfactory, so Krisin used the back button twice to go back to Google, and looked through more results until she found a link to Yahoo! Launch. Clicking this resulted in Yahoo!'s Nine Inch Nails band page where she read through the part of the bio shown and then continued to the "more..." link at the end of the displayed part.

We returned to the second task at the end of our session, posing a recall task: "Remember seeing a cool

picture of Trent Reznor on one of all these Nine Inch Nails pages you checked out? Try and pull it up." Surprisingly, Kristin went to images.google.com, planning to pick out the picture from the results. During planning, our team members had expected Kristin to go back to previously visited sites to find the picture. "What if you could not easily find the picture in Google's image search?" we asked Kristin. She replied that she would then try Google, which would lead to her traversing the previously traveled path. She did not mention using the History.

Kristin brought back the Spark Notes page she was reading (last visited beginning of school) for Martian Chronicles by typing in and sending the browser directly to sparknotes.com, searching by the title, and going to its analysis.

–kept coming up with more scenarios of pages that would be more and more difficult to locate — the idea was to get Kristin to mention the History to find the pages, or to see *when* she would mention the History. never said she'd try the History until we made mention of somehow knowing the exact date visited. Following that was a telling quote, "I would look at the history thing...*if it was still there* (mumbled)." – One problem is that her History actually gets wiped periodically, every three days. Would only think to act to use History in cases when had looked up the site *very* recently, like a few hours ago in the same "surfing session".

What Users Do Today

Current History implementations demand that users have enough information in the head to decipher the desired page from all others by recognizing URLs, page headers (which are often very poorly written), or time and date visited. Because this requires an unacceptably large amount of mental work, our users chose to ignore the History feature completely and found other ways to get the desired information. For example, going back to Google.com (assuming that the page had originally been found using Google) and searching again using the same (or at least a similar) query allowed users to find the appropriate page using many more cues than the History feature allowed they could use the ordering of the results, see which links they had already taken, and read the summaries to recall the proper site. Also, instead of memorizing long, meaningless URLs or bothering to learn to recognize certain ones from the long lists in the History, users tended to memorize more meaningful link routines (go to a certain starting site every time, then follow the same set of links each time to get to a certain target site) when any form of memorization was used. Finally, users utilized the bookmark feature to create a sort of 'custom' History. By only bookmarking sites that were likely to be revisited, the user is able to keep the extraneous noise of terribly long History lists to a minimum and by creating custom titles, the user is able to insert personally significant cues that are most valuable later.

Task Centered Analysis

Task 1 — Jaska is trying to decide what classes to take in the coming semester and decides to refer to the Gradcheck program to see what requirements he has yet to fulfill. He opens a web browser and types "www.ece.uiuc.edu" into the address field which takes him the ECE homepage. He then clicks on the "Undergraduate" tab along the top of the page. From the six links presented on the page, Jaska clicks on the third one labeled "Advising and Curriculum." Finally, under the "Advising Resources" category he finds the "On-Line Graduation Check Sheet and Unofficial Transcript (History)" link and clicks on it. He is redirected to the Bluestem login promt where he enters his netID, hits enter, enters his password, and finally hits enter one last time. Jaska now is able to see what classes he must take and proceeds to plan his schedule.

Task 2 — Dave knows the target EXACTLY, but does not know path well/at all. Dave attempts to check his graduation requirement status; he's done this before but very infrequently. He goes to the UIUC main page to start off, but he's not sure where to go from there. He chooses the OAR website, which seems like a good bet. Though, when he gets there, he becomes less sure, when he finds the grade reports finally on the OAR website and sees that it doesn't contain his graduation requirements he realizes that Grad Check is on a different site, but he does not remember which one. He returns to the uiuc page, but is now completely lost. Dave decides to check his bookmarks to see if he book marked the site. In his long list of unorganized bookmarks he notices "General Education - Requirements" however when he goes to the page it's just a static list. He realizes that he book marked this page when he was looking for what french class he takes. Dave then forgets his task and starts looking for french classes. After a few minutes of working on his side tracked task, he notices a link on the Engineering page, and finally locates Grad Check.

Task 3 — Jaska is talking to a friend and eventually the topic of conversation moves toward the intentional crashing of the Galileo telescope. Jaska remembers skimming over a related article the previous day on Slashdot.org. He decides to find more information on the subject, and because he has already seen the Slashdot.org piece, it is his first intuition to find the same article again. He first opens his History while saying "I don't know how much it keeps because I hardly ever use it." The History had four sites retained from earlier in the browsing session. Jaska recalls that he has his History automatically clear itself after every session because he claims that he never uses it. Jaska then returns to Slashdot.org saying that aside from the subject of the article, that was all he knew. Jaska searches the current articles but is unable to find the desired one. He then looks under the "Older Stuff" heading and finds a link to the previous day's edition. He searches for and locates the desired article.

Task 4 — Kristin knows that she is in need of some new music, but she can't think of an artist whose music interests her. She considers visiting mp3.com to download some free mp3's, but does not want to just blindly select mp3's to download. Kristin decides that first she needs to gather information on emerging artists, so she decides to go to previously visited message boards dedicated to favorite artists, on which she remembers seeing mention of new bands. After spending time on each of the three sites, she finds interesting posts about band X, a new group with a new album. Shen then goes to mp3.com, searches for band X's music, and downloads several of their mp3's.

Task 5 — Kristin remembers seeing a cool picture of a lead singer on one of a myriad of band Y pages she was on recently, because she wants to make it her desktop background. Although Kristin rarely checks the History, she just visited pages related to band Y a couple hours ago, so it occurs to her to check the History for these sites. She opens her browser's History and is faced with about 25 URL's she has visited through the course of the day, most of which do not mean much to her due to esoteric URL's or uninformative, simple titles like "band Y." Kristin then gets to work checking each URL until she finally finds the image she wanted.

1   Note-Worthy Observations

- Dave's bookmarks that were organized, were organized by semester. Every browser organizes history links by days, maybe there should be other choices. Without saying outright that history links by semester would be too massive to follow, allowing the user to choose his/her time increments may be something we should think about.

- When we asked Dave about the article he found on slashdot the other day he went immeadiately to the "GO" menu which is Chimera's version of a history menu. The History in the "GO" menu is session history only, so once he opened it, he closed it immediately as it was completely empty. Dave had a williness to use the history, but he was denied by the program. This probably wasn't the first time, so

it suggests that some users will still attempt to use the history even though it may not work to well for them which bodes well for when we try to improve the history.

- For the T-Shirt shopping re-task, Dave and Jasko both relied on trying to remember the exact search term they originally used on google. It took both 3 or 4 attempts to get the right google results and then quite a bit of trial and error before getting to their favorite of the original task. Recalling exact google querys might be something that we should look into.

- After the visitation was officially over, Jay and Jasko started talking about using UIDirect on Mac OS X. Jay had written a client to do so which Jasko had on his machine, however Jasko also had another unofficial client on his machine that he found indirectly link from the cites page. Jay was interested in this other client and so Jasko attempted to find it on the CITES page, but after a great deal of effort, including searching through his history, which he admitted he never used, he gave up. Thus further illustrating the problem in a real world situation.

- We got positive feedback from Kristin when we finally spilled the beans about our project. She was definitely against organizing sites by grouping "ideas" into affinity groups and was more in favor of the visual representation of history organized chronologically with arrows.

- Kristin bookmarked her Chemistry class's website on the first day of school. It's something she knows she'll come back to. This type of task is better for bookmarks than history.

2   Missed Data

We wanted a task that the original user path might not exist on the web anymore, which is why we chose Slashdot. Slashdot changes so quickly that it is a real pain to find the same article a week later. However, since we did Jaska only 24 hours later he was able to click a button on the site that would give him yesterday's slashdot page, so his path was pretty much exactly the same. Jasko said he wouldn't have tried going to Slashdot if it had been longer since the article was posted, as Slashdot's search engine is so poor it would have been impossible to find the page, however we weren't able to observe this behavior because of multiple scheduling conflicts and short time frame.

3   Lessons Learned

– Josh and Nadia were with Kristin and both took notes and both asked questions, which was somewhat good because it kept the environment conversational, but mostly bad, because both felt the need to note things down after a question was asked. So, there was an awkward pause while we're scribbling things down and the user waits. And awkward silences do not make for good flow/do not put the user at ease. Also, next time it would be especially better to have a dictation tape going to catch quality dialogue and quotes.

– Blair and Jay were with Dave and Jaska. Blair did most of the talking, Jay did a lot of watching closely and note taking, so there weren't any awkward pauses. Dave was a little timid at first in that he thought we were evaluating him, but when we explained we were just interested in the task, he felt better. We had a program that recorded screenshots of each page as visited into a linear movie, but it didn't work when we installed it on their home machine, and thus was much more difficult to keep notes to find out what they visited and were mentally honing in on for the first day. Though to solve that issue and use a preconfigured computer would affect the data we've learned watching them use their typical enviornment. The only other benefit I could see is having more time, I think the data could have been improved a great deal if we could have had a three or four days in between the priming and recall sessions, rather than one or two.