

Small Displays

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My new
kitty,
Erwin

Overview: Small-screen Displays

- Example of small displays
- What's the problem?
- Look at 2 different problems and possible solutions
 1. Web browsing on a small screen
 2. Navigating maps on a small screen
- Conclusion and overview

Examples of Small-screen Displays



The Problem

- Screen Size
 - Apparently size does matter
- Information
 - What information do you need?
 - How do you get all the information you need?
 - Focus+ context, zooming
- Different interaction techniques

Web Browsing

Summary Thumbnails: Readable Overviews for Small Screen Web Browsers

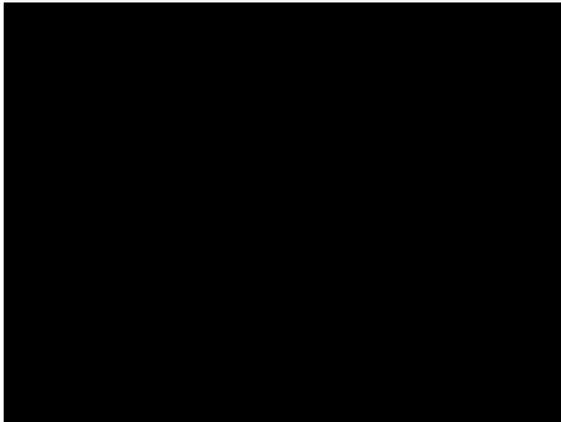
THE PROBLEM:

- How to display a web page so users can quickly and easily get the information they require on a small-screen display?
- Previous proposed solutions
 - Show web page as is: too hard to read
 - Thumbnails: text is too small to read
 - Column view: too much scrolling, doesn't preserve original layout of webpage

Proposed Solution: Summary Thumbnail

- Thumbnail of original webpage, but all text is readable
- Text is filtered and enlarged
 - Common words removed
 - Preserve line count





Findings from user studies



- Qualitative user study
 - 9 users looked at BBC news web page on 3 different interfaces to find an 'interesting' article
 - Summary thumbnail more useful than thumbnail for keyword search & more useful than single-column for finding a previously viewed area
- Quantitative user study
 - 11 users viewed set of different web pages in 4 different interfaces
 - Summary thumbnail:
 - Faster than single column
 - Needed less zooming than thumbnail

Critique



- Pros
 - Maintain overview and readable text of web pages
 - Performed both quantitative and qualitative user studies
 - Tasks created by interviewing volunteers and aggregating results
- Cons
 - Text may be hard to understand with words missing
 - Control Issues
 - Used desktop emulation

Overall:

- Summary thumbnail is a good compromise between previous work (still get overview, but can read some text on screen)
- Not perfect solution, need better zooming interaction
- User study show 9/11 users would install summary thumbnail on their own PDAs

Map Navigation



Halo: A Technique for Visualizing Off-Screen Locations

THE PROBLEM:

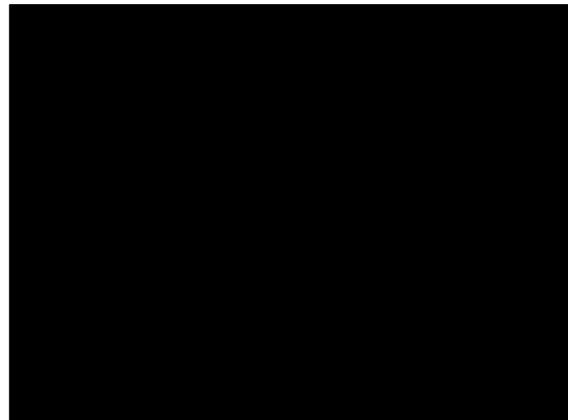
If a user is viewing multiple locations on a map, once they zoom into one location information about the other locations are lost.



Proposed Solution: Halo



- For zoomed in views, add information for other locations
- Arcs
 - The size of arcs determines the distance
 - Street Light concept
- Demo



User studies

- Halo vs. Arrows
- 12 users completes 4 different tasks w/ both interfaces
 - Locate task
 - Closest task
 - Traverse task
 - Avoid task



Results

- Task completion time
 - Halo 16- 33% faster than arrow for all 4 tasks
- Error Rates
 - Halo interface produced more errors for the Locate task, but no difference for all other tasks
- Subjective Preferences
 - 6/11 preferred Halo
 - 3/11 preferred Arrows
 - 2/11 had no preference

Critique

- Pros
 - Interviews of users who use map navigation system to come up with tasks
 - Don't have to annotate distance
 - User studies include 4 different types tasks
 - Can be used for all sizes of displays, not just small displays
 - Cons
 - Arc concept may be hard to understand
 - An author of the paper was a participant in the user study
 - Used desktop emulation
 - Only useful for very specific type of task
- Overall:**
- A creative and simple solution to help users navigate
 - User study demonstrates usefulness of tool

Overview

- Looked at:
 - Examples of different small displays
 - A way to help users view web-pages on a small screen
 - A way to help users use a map to investigate and navigate different locations
- Neither one of these solutions look at the actual interaction techniques of small displays
 - Field studies needed

References

- Baudisch, P. and Rosenholtz, R.
Halo: A Technique for Visualizing Off-Screen Locations.
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- Lam, H. and Baudisch, P.
Summary Thumbnails: Readable Overviews for Small Screen Web Browsers.
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