Community Meeting 10 AM - Noon

Monday October 12, 1987 Room 4107 Computer Science

Research Directions for Hyperties

To: Selected Faculty and Graduate Students in Computer Science,
Researchers in other departments, Potential users of Hyperties

From: Ben Shneiderman, Department of Computer Science,
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We have been developing a hypertext system (see attached description of Hyperties) for more than four years and have reached the point where we have exciting demonstrations with multiple windows, touchable graphics, and embedded menus in text on the SUN workstation, an effective touchscreen version on PCs, and a commercial version being sold by Cognetics Corporation of Princeton, NJ. Stop by in Room 2331 or 2336 for a demo.

There are many exciting directions for research and we do have financial resources to support Graduate Research Assistants starting now or in January. We invite you to participate in a general discussion of which directions to pursue. We welcome the participation of graduate students to do implementations and conduct evaluations. Here are some possibilities:

- Advanced browser: Support for sophisticated search strategies, bookmarks, paths, tours, tables of contents, annotations, printing, etc.

- String Search: Hatem Slim has implemented the signature file approach (under Christos Faloutsos' direction) on PC-DOS, but the user interface needs to be done. We have a preliminary design but it should be considered, then implemented and then refined.

- Automatic construction of Hyperties databases from other sources (e.g. existing documents such as course listings, library catalogs, program text (we hope to do a COBOL browser on Hyperties for Pacific Bell), or legal citations).

- Touchscreen strategies: Richard Potter's success in implementing and evaluating versions of the "finger mouse" encourages me to pursue further ideas. By giving continuous feedback in the form of a plus sign above the user's finger and enabling execution only when the finger is lifted, users had lower error rates and higher satisfaction.

- Touchable graphics: Bill Weiland has a wonderful demo for NASA on the SUN showing graphics and text about the Space Telescope. As the user moves the mouse-controlled cursor over the diagram, components of the Space Telescope pop up. A mouse click yields a diagram of the contents or text describing it. We can do better than Hypercard in showing what items are selectable.

- Region identification: If a large number of graphics or video images are to be put in the system, it would be nice to identify automatically the touchable regions. For example, if the input is a US map, instead of having to mark each

region, it would be nice to have the image processing software identify the regions. Maps may be hard, but organizational box charts are easy - are the enough easy cases?

- Video connections: Our design incorporates videodisk images, but a solid interface with a videodisk player needs to be built. We need to better understand the conversion of video images to bitmapped displays. How can we mix video images with text or computer generated graphics?

- Multi-window strategies: Kobi Lifshitz's explorations should be continued. Multiple-window automatic window management and user-controlled strategies are all possible. We favor non-overlapping windows and automatic placement of information. How about implementing Hyperties under MS-Windows?

- Knowledge structure: how should hypertext documents be structured to serve specific needs such as training vs. reference or browsing vs. fact finding? Do users get lost when there are many small articles as opposed to a smaller number of larger articles? How can designers minimize user disorientation?

- Can AI techniques improve the usefulness of hypertext? Are there automatic adaptive strategies by which the users skills or plans can be ascertained as a basis for altering the user interface or guiding the user to the information they seek.

- How do screen size, response time, color highlighting, or other formatting issues affect usability and performance.

- Evaluations: what kind of experimental tests are appropriate? Which tasks would a hypertext system be most helpful for?

- Specification methods for text, graphics, video, and sound: We have a working authoring tool to generate the system, but many features can be added. We want to specify animations or time sequences of presentations.

- Conditional text: it is possible to arrange that only text relevant to the user's task appears on the screen - an expansion of Larry Koved's master's thesis would be great.

- Explorations: Would anyone want to write an interactive novel or mystery in a hypertext environment? Are there useful applications that you know of that would provide intriguing testing grounds for hypertext?