Drowning in Data

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Information Explosion

People are getting stupider every day, relatively speaking.

The complexity of the world is increasing geometrically.

But your ability to learn is at the same slow trickle it has always been.

Information is gushing toward your brain like a firehose aimed at a teacup.
Situation

- Increasing amount of data (helpful & not helpful) is becoming available
- Internet and WWW have radically increased people’s access to data
How much data?

- Between 1 and 2 exabytes of unique info produced per year
  - $1000000000000000000 \times 10^{18}$ bytes
  - 250 meg for every man, woman and child
  - Printed documents only .003% of total

Peter Lyman and Hal Varian, 2000
Cal-Berkeley, Info Mgmt & Systems
www.sims.berkeley.edu/how-much-info
Problem

More data should be helpful but... often becomes a negative instead

Makes it difficult to find what one really wants, complicates browsing

Sheer amount can intimidate, and can make people reluctant to “dive in”

R. S. Wurman
Gas on the Fire

- Pervasive/Ubiquitous computing
  - Many potential benefits, but sensors and computers everywhere will just produce more data

You're running out of milk!
Big HCI Challenge

 Difficult problems:

- Enabling access to the “right data”
- Empowering people to browse, filter, search, compare, contrast, summarize, ...
- Leveraging what people do best
Promising Direction

- Information Visualization
  - Providing techniques and tools for transforming *data* (raw text and numbers) into *information* (understanding, insight) thus making it useful to people

London subway - Harry Beck

www.smartmoney.com/marketmap
My Research Group

- Information Interfaces
- Helping people address the explosion of data through a variety of ways
- Evaluation is a key component in all work
- Some example projects...
Browsing Hierarchies

Treemap
Shneiderman & Johnson

Hyperbolic tree
Lamping & Rao

SunBurst
Visualizing file and directory structures
Root dir at center
Color-file type
Angle-file/dir size

MS Faculty Summit
SunBurst Negative

- Small peripheral files difficult to examine and distinguish

- Solution: Use animated zooming techniques to show focus + context (dynamic fisheye)
Information Art

Conveying peripheral awareness information through personalized ambient artistic visualizations
Anthropomorphic UIs

Need to better understand if and where such UIs can be helpful and useful

Very controversial

(Folks around here have some experience with these UIs)
Approach

- Conducting series of Wizard of Oz empirical studies to gauge usefulness and people’s impressions
- Key factors/variables
  - Agent characteristics
  - User characteristics
  - Task
Other Projects
Conclusion

- Proper focus:

  $\text{HCI, not H\textsubscript{C}I}$

- Find ways to help people use information
  not
  Technology for technology’s sake
For More Information...

www.cc.gatech.edu/gvu/ii

Information Interfaces

With the advent of the Internet, the World Wide Web, portable computers, portable communication devices, and greater computing power in general, the amount of information that confronts us each day has grown astronomically. While we would hope that this information would assist people as they make decisions in their day-to-day lives, its sheer volume often serves to confound and paralyze instead. Our research group develops ways to help people understand information via user interface design, information visualization, and software agency. We seek to utilize computing technologies to help people make sense, make better judgments, and learn from all the information available to them.

People

Faculty
John Stasko

Students
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Mike Fulk
Jelka
Duke Hutchings
Todd Miller
Tom Fashley
Rodney Peters
Cathy Etchheitz Polk
Erica Wingo
Jon Yim

Current Projects

InfoCanvas Information Art - Developing expressive, ambient visual displays that convey the state of important information to people.

NetVizor - Visualizing large-scale network topologies to assist network designers and analysts.

Organize This! - Exploring information management to discover underlying goal-oriented user activities to build better visualization tools.

Software Visualization - Numerous past and current projects involving algorithm animation, visual debugging, data structure display, program visualization, and empirical studies.

SpaceCadet - Exploring new techniques in effectively visualizing the world that