Early Visions of HCI

Prof. James A. Landay
University of Washington
Autumn 2006

Hall of Fame or Shame?

• PointCast “Personalize Channels” dialog

Hall of Shame, but why??

• What do “move up” & “move down” do?
  – better affordance if you arrange vertically
• Description of “DLJdirect” unhelpful
• Help inconsistently displayed for buttons

Outline

• Review
• Computing in 1945
• Vannevar Bush & As We May Think
• Administrivia
• Computing in the 1960s
• Doug Engelbart & Augmenting Intellect

Review
“Instant messaging has unleashed many new tasks”

Context - Computing in 1945

- Harvard Mark I
  - Picture from http://piano.dsi.uminho.pt/museuv/indexmark.htm
  - 55 feet long, 8 feet high, 5 tons

- Ballistics calculations
- Physical switches (before microprocessor)
- Paper tape
- Simple arithmetic & fixed calculations (before programs)
  - 3 sec. to multiply

A Little About Vannevar Bush

- Name rhymes with “Beaver”
- Faculty member MIT
- Coordinated WWII effort with 6000 US scientists
- Social contract for science
  - federal government funds universities
  - universities do basic research
  - research helps economy & national defense
As We May Think

• Published in the Atlantic Monthly in 1945!
• Futuristic inventions / trends
  – wearable cameras for photographic records
  – Encyclopedia Brittanica for a nickel
  – automatic transcripts of speech
  – Memex
  – trails of discovery
  – direct capture of nerve impulses
• Which was your favorite?
• Which do you want (or don’t want)?

As We May Think

• Very optimistic about future
  – technology could help society
  – technology could manage flood of info
• He was one of the most informed people of his time
  – look at trends, guess where we’re going
  – What was he right about? Wrong about?

As We May Think

• Have come true
  – increased specialization
  – flood of information
  – faster / cheaper / smaller / more reliable
• He missed or we are still waiting
  – microphotography?
  – digital technologies?
  – non-science / non-office apps?
  – memex?

As We May Think

• Not so much predicting future as “inventing it”
  – hypertext
  – wearable memory aid
• Use technology to augment human intellectual abilities
• New kinds of technology lead to new kinds of human/machine & human/human interaction
• Be aware that engineering can impact society

As We May Think

• Computers weren’t always like this…
  • Computers don’t have to be like this!
Administrivia

• Attendance
• Turn in assignment #1 now!

Context - Computing in 1960s

• Transistor (1948)
• ARPA (1958)
• Timesharing (1950s)
• Terminals and keyboards

• Computers still primarily for scientists and engineers

About Doug Engelbart

• Graduate of Berkeley (EE ’55)
  – “bi-stable gaseous plasma digital devices”
• Stanford Research Institute (SRI)
  – Augmentation Research Center
• 1962 Paper “Conceptual Model for Augmenting Human Intellect”
  – complexity of problems increasing
  – need better ways of solving problems

Augmenting Human Intellect

• 1968 Fall Joint Computer Conference (SF)
• Video of NLS (oNLine System)
• All this took place before
  – Unix and C (1970s)
  – ARPAnet (1969) & later Internet
• Won Turing Award in 1997 for this work

Augmenting Human Intellect

• Advantages of chorded keyboards?
• Disadvantages?

“At SRI in the 1960s we did some experimenting with a foot mouse. I found that it was workable, but my control wasn’t very fine and my leg tended to cramp from the unusual posture and task.”
Augmenting Human Intellect

• So what did we just see?
  – in terms of devices, interactions, & apps

Augmenting Human Intellect

• First mouse
• First hypertext
• First word processing
• First 2D editing & windows
• First document version control
• First groupware (shared screen teleconferencing)
• First context-sensitive help
• First distributed client-server
• Many, many more!

Augmentation not Automation

“I tell people: look, you can spend all you want on building smart agents and smart tools…”

“I'd bet that if you then give those to twenty people with no special training, and if you let me take twenty people and really condition and train them especially to learn how to harness the tools…”

“The people with the training will always outdo the people for whom the computers were supposed to do the work.”

Augmenting Human Intellect

• Example: Roman Numerals vs Arabic
• What is XCI + III?
• Now what is XCI x III?
• What is 91 * 3?
• New kinds of artifacts, languages, methodologies, and training can enable us to do things we couldn't before or simplify what we already do
Tricycles & Bicycles: Specialized Tools

Where is Engelbart now?

• Bootstrap.org
  – Office in a Logitech building
• "[B]oosting any organization’s ability to successfully address problems that are complex and urgent"
• "[I]mproving society’s collective IQ"
• Bootstrapping society to improve how we improve

Summary

• Computers do not need to be the way we see them today
• Predict the future by inventing it
• Don’t only concentrate on novices

Next Time

• Conceptual Models & Interface Metaphors
  – Readings will be on web site later today