Designing the Future: Early & Future Visions of HCI

Prof. James A. Landay
Computer Science Department
Stanford University
Winter 2021
February 17, 2021

Hall of Fame or Shame?

Virgin America Website
Courtesy Andrea S.
https://www.virginamerica.com/book

Who's flying?

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Hall of Fame!

Minimalist design w/ large & simple instructions
Whitespace shows what is important/related
Automatic location setting
Large calendar for easy/fast date selection (Why is it fast?)

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https://www.virginamerica.com/book

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Outline
- Wizard of Oz Technique
- Computing in 1945
- Vannevar Bush & “As We May Think”
- Doug Engelbart & Augmenting Intellect
- SketchPad, Dynabook & The Xerox Star
- 2021 CS147 Film Festival Awards
- Team Break
- Future Visions of HCI

Wizard of Oz Technique
- Faking the interaction. Comes from?
  - the film “The Wizard of OZ”
  - “the man behind the curtain”
- Long tradition in computer industry
  - e.g., prototype of a PC w/ a DEC VAX (minicomputer) behind the curtain
  - much more important for hard to implement features

Carbon Shopper
much more important for hard to implement features

Computing in 1945
Harvard Mark I: 56 feet long, 8 feet high, 5 tons
http://sites.harvard.edu/~chsi/markone/images/Mark1HousingSmall.jpg
Computing in 1945

**ENIAC**
- First Electronic General Purpose Computer


Vannevar Bush Kicked Off Big Science

- MIT faculty member
- Coordinated WWII scientific effort
- Social contract for science
  - federal government funds universities
  - universities do basic research
  - helps economy & national defense
- “As We May Think”, the Atlantic Monthly, July 1945
- Futuristic inventions / trends?
  - wearable cameras to record life
  - encyclopedia for a nickel
  - automatic transcripts of speech

Memex

- Picture from http://www.dynamicdiagrams.com/design/memex/model.htm#download

Was he right? Memex never built... or was it?

Predicting → Inventing the Future

Computers weren’t always like this...
Computers don’t have to be like this!
Computing in 1965

Melba Roy Mouton, an early programmer at NASA. (one of the “Hidden Figures”)
Melba Roy heads the group of NASA mathematicians, known as “computers,” who track the Echo satellites. Roy’s computations help produce the orbital element timetables by which millions can view the satellites from Earth as it passes overhead. She went on to become Program Production Section Chief at Goddard Space Flight Center.

Douglas Engelbart (Turing Award 1997)
Augmenting Human Intellect
- Stanford Research Institute (SRI) in the 1960s
- 1962 Paper “Conceptual Model for Augmenting Human Intellect”
  - complexity of problems increasing → need new tools to solve
- Demonstrated NLS (oNLine System), 1968 Fall Joint Computer Conf. (SF)
- Known for?
  - mouse
  - mouse

Engelbart’s Crusade

“The complexity of a lot of the problems [in the world] and the means for solving them are just getting to be too much. The time available for solving a lot of the problems is getting shorter and shorter. So the urgency goes up… The complexity/urgency factor had transcended what humans can cope with. I suddenly flashed that if you could do something to improve human capability to cope with that, then you’d really contribute something basic.”

Augmenting Human Intellect

The NLS Software

Augmenting Human Intellect: Firsts!
- First mouse, and ?
- First 2D editing & windows
- First hypertext
- First word processing
- First document version control
- First groupware (shared screen teleconferencing)
- First context-sensitive help
- First distributed client-server
- Many, many more!

Chorded Keyboard

Tricycles & Bicycles: Specialized Tools

Tricycles vs. Bicycles

"If ease of use was the only valid criterion, people would stick to tricycles and never try bicycles." – Douglas Engelbart

Engelbart’s Influences

More on Engelbart

Bootstrapping, Thierry Bardini, 2000


Tools for Thought, Ch. 9 “The Loneliness of a Long-Distance Thinker”, Howard Rheingold, 2000

MouseSite (video clips/papers)

SketchPad – Sutherland (1963)

VR – Sutherland (1965)

Dynabook – Kay (1974)

Xerox Star – 1st Commercial GUI (1981)

“The best way to predict the future is to invent it”
Alan Kay

2021 CS147 Film Festival Awards
- Best Acting
- Best Music/Soundtrack
- Funniest/Most Humorous
- Best Locations
- Best Adaptation to COVID Restrictions
- Best Production Values
- Best Project Concept
- Best Overall Video
The Nominees...

Best Acting

Runner Ups
Memento & Voices

Winner
CollegeCompanion

Best Music / Soundtrack

Ossi

Funniest/Most Humorous Video

Winner (tie)
Fishbowl & Ossi

Best Locations

Runner Ups
Voices

Winner
Ven

Best Adaptation to COVID Restrictions

Winner
Fishbowl
Best Production Values

Runner Up
WageBase

Winner
Rooted

Best Project Concept

Runner Up
WageBase

Winner
ALTogether

Best Overall Video

Runner Ups
Rooted & Spotter

Winner
ALTogether

Administrivia

• Keep up w/ readings/HW on class website
  - http://hci.stanford.edu/cs147
  - remember midterm based on lecture, reading & project HW, but will primarily be a multi-part design problem this year (less memorization of facts, but no all the methods and why you use them)

• Questions about Medium-fi Prototype assignment?

Grading Buckets

✔: Assignment does not meet specifications in this area. This is a B-range grade and below.

✔: Assignment meets specifications in this area. This is a B range grade.

✔+: Exceeded assignment specifications in this area, above expectations. This is an A range grade.

+: Amazing work, far exceeds expectations. This is an A+.
EXIT TICKET
https://forms.gle/wtUbMoaSaVnmyZd76

“The best way to predict the future is to invent it”
Alan Kay

The Future


Microsoft Productivity Future Vision 2019

Spike Jonze’s Her (2013)
Next Time

- Lecture
  - Heuristic Evaluation

- Read
  - How to Conduct a Heuristic Evaluation by Jakob Nielsen

- Studio
  - Medium-fi prototypes results
    - what did you do? what changed? why? (give design rationale/test results)