HCI+D: USER INTERFACE DESIGN + PROTOTYPING + EVALUATION

Designing the Future:
Early & Future Visions of HCI

Prof. James A. Landay
Computer Science Department
Stanford University

CS 147
Autumn 2014
September 25, 2014

Interface Hall of Shame or Fame?

- Bar of Soap
  - has a hole!
  - where would you find?

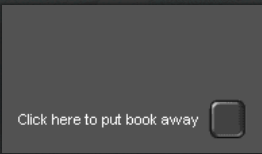### Interface Hall of Fame!

- Bar of Soap
  - has a hole!
  - where would you find?
    - hotels
- Easier to hold onto?
  - small sizes slip…
- Eco-Friendly
  - doesn't waste (50g)
  - full size is 120g
- Tie a rope to it
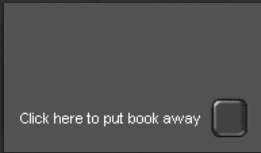
Interface Hall of Shame or Fame?

Click here to put book away

- From IBM's RealCD
  - prompt
  - button

Interface Hall of Shame!

Click here to put book away

- From IBM's RealCD
  - prompt
  - button
- Black on black???
  - cool!
  - but you can't see it
  - "click here" shouldn't be necessary
    - like a door that has a sign telling you to push

Interface Hall of Shame!

CS 147 – HCI+D: UI Design, Prototyping, and Evaluation, Autumn 2014
Prof. James A. Landay
Stanford University

HCI+D: USER INTERFACE DESIGN + PROTOTYPING + EVALUATION

Designing the Future:
Early & Future Visions of HCI

Prof. James A. Landay
Computer Science Department
Stanford University

CS 147
Autumn 2014
September 25, 2014

Administrivia

- Sign up for studio by the end of class
  - http://bit.ly/ZP3REi
  - Thur assignees/priority 1 signups will know by 3 PM today (note this is for folks with a strong reason)

Autumn 2014   HCI+D: User Interface Design, Prototyping, and Evaluation   8
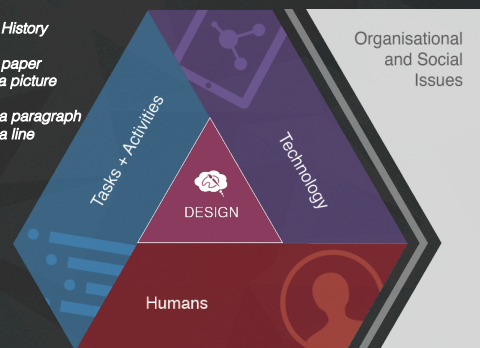

Outline

- Review
- Computing in 1945
- Vannevar Bush & As We May Think
- Doug Engelbart & Augmenting Intellect
- Break
- Administrivia
- SketchPad, Dynabook, & The Star
- Future Visions of HCI

Autumn 2014   HCI+D: User Interface Design, Prototyping, and Evaluation   9

Review

Learning History

Writing a paper
Drawing a picture

Copying a paragraph
Coloring a line

Organisational and Social Issues

Tasks + Activities

Technology

DESIGN

Humans

Autumn 2014   HCI+D: User Interface Design, Prototyping, and Evaluation   10

Review

"Instant messaging has unleashed many new tasks"

Organisational and Social Issues

Tasks + Activities

Technology

DESIGN

Humans

Autumn 2014   HCI+D: User Interface Design, Prototyping, and Evaluation   11
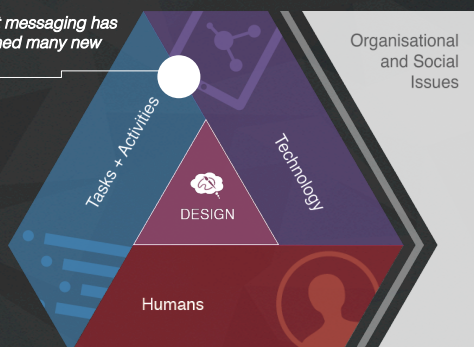
Context –Computing in 1945
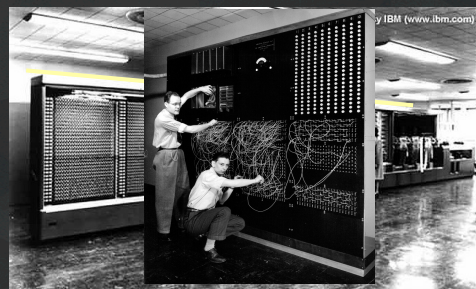
Harvard Mark I : 55 feet long, 8 feet high, 5 tons
http://piano.dsi.uminho.pt/museuv/indexmark.htm

Autumn 2014   HCI+D: User Interface Design, Prototyping, and Evaluation   12

2

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

http://www-eecs.mit.edu/AY95-96/events/bush/

- "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
  - trails of discovery
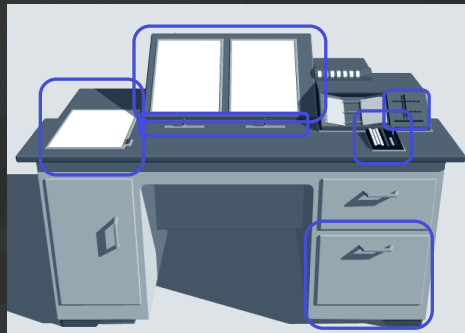 - capture of nerve impulses
  - Memex

Autumn 2014 — HCI+D: User Interface Design, Prototyping, and Evaluation — 13

As We May Think

Picture from http://www.dynamicdiagrams.com/design/memex/model.htm#downloa
Demo at http://www.dynamicdiagrams.com/case_studies/mit_memex.html

Autumn 2014 — HCI+D: User Interface Design, Prototyping, and Evaluation — 14

Memex never built… or was it?

Memex #001 by Trevor Smith, 2013
http://trevor.smith.name/memex/

Autumn 2014 — HCI+D: User Interface Design, Prototyping, and Evaluation — 15

Predicting → Inventing the Future

Computers weren't always like this…

Computers don't *have* to be like this!

Autumn 2014 — HCI+D: User Interface Design, Prototyping, and Evaluation — 16

Douglas Engelbart
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
- Demoed NLS (oNLine System), 1968 Fall Joint Computer Conf. (SF)
  - a real paradigm shift here
- Known for?
  - mouse

Autumn 2014 — HCI+D: User Interface Design, Prototyping, and Evaluation — 17

Augmenting Human Intellect

Autumn 2014 — HCI+D: User Interface Design, Prototyping, and Evaluation — 18

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!

Autumn 2014   HCI+D: User Interface Design, Prototyping, and Evaluation   19

The Mother of All Demos

See many more video clips and papers at
http://www.dougengelbart.org/firsts/dougs-1968-demo.html

Autumn 2014   HCI+D: User Interface Design, Prototyping, and Evaluation   20

Tricycles & Bicycles: Specialized Tools

http://www.athensnews.com/ohio/article-42835-good-for-the-heart-tricycle-race-fundraiser-now-open-to-all.html

http://www.flickriver.com/photos/hotair2112/134303284/

Tricycles   vs.   Bicycles

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

Autumn 2014   HCI+D: User Interface Design, Prototyping, and Evaluation   21

BREAK

Autumn 2014   HCI+D: User Interface Design, Prototyping, and Evaluation   22

SURVEY

Autumn 2014   HCI+D: User Interface Design, Prototyping, and Evaluation   23

Your poll will show here

1 Install the app from pollev.com/app

2 Make sure you are in Slide Show mode

Still not working? Get help at pollev.com/app/help
or
Open poll in your web browser

Administrivia

- Sign up for studio by the end of class
  - http://bit.ly/ZP3REi
- If you know you are going to drop, do so by next Thur

- You will do a short group assignment in studio this week & turn in by Friday night

- Assignment #1 – project proposal due next Tue.
  - coursera turn in coming soon

- Sign up on Piazza for announcements
  - sign up link: http://piazza.com/stanford/fall2014/cs147

- Keep up w/ readings/HW on class website
  - http://hci.stanford.edu/cs147
  - remember pop quizzes based on lecture, reading, or HW

Autumn 2014 · HCI+D: User Interface Design, Prototyping, and Evaluation · 25

STANFORD CENTER ON LONGEVITY

2014-2015 Design Challenge

"Enabling Personal Mobility Across the Life Span"

in collaboration with Aging 2.0

A worldwide university design challenge looking for solutions to:
- Reduce sedentary lifestyles
- Encourage and enable physical movement and exercise
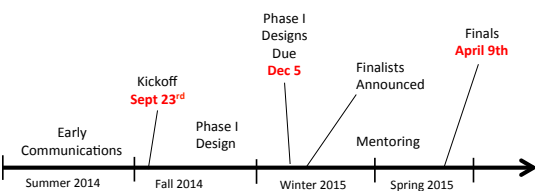- Reduce barriers and increase mobility in the home and community

Prizes
- $10,000 for 1st, $5K for 2nd, $2K for 3rd
- $1000 for finalists teams (5-8 selected in January)
- Present to companies and investors interested in solutions for aging populations
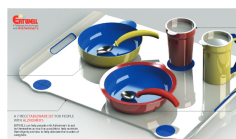
STANFORD CENTER ON LONGEVITY · 26

Challenge Timeline

Early Communications — Summer 2014

Kickoff **Sept 23rd** — Fall 2014

Phase I Design

Phase I Designs Due **Dec 5** — Winter 2015

Finalists Announced

Mentoring — Spring 2015

Finals **April 9th**

STANFORD CENTER ON LONGEVITY

LAST YEAR'S WINNERS:

1st Place: EATWELL

Sha Yao
Academy of Art Institute (San Francisco)

2nd Place: Taste

Taste+

Keio-NUS CUTE Center
National University of Singapore

3rd Place: Memory Maps

Ritika Mathur
Copenhagen Institute of Interaction Design

STANFORD CENTER ON LONGEVITY · 28

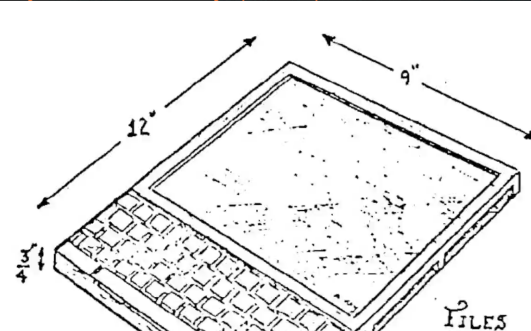## SketchPad – Sutherland (1963)

Autumn 2014 · HCI+D: User Interface Design, Prototyping, and Evaluation · 29

Dynabook – Kay (1974)

Autumn 2014 · HCI+D: User Interface Design, Prototyping, and Evaluation · 30

Xerox Star – 1st Commercial GUI (1981)

"The best way to predict the future is to invent it"

Alan Kay

?

The Future

Minority Report (2002)

Microsoft Productivity Future Vision 2019

Spike Jonze's Her (2013)
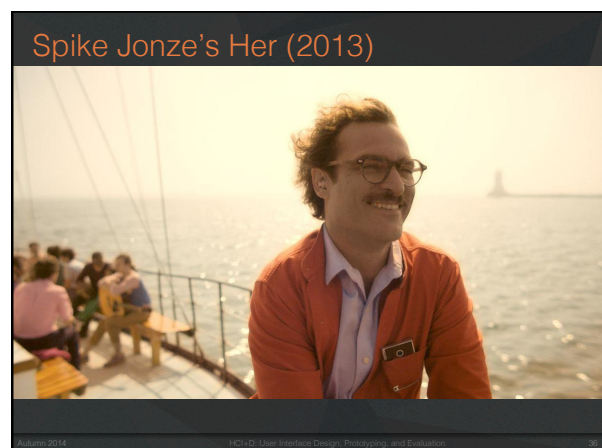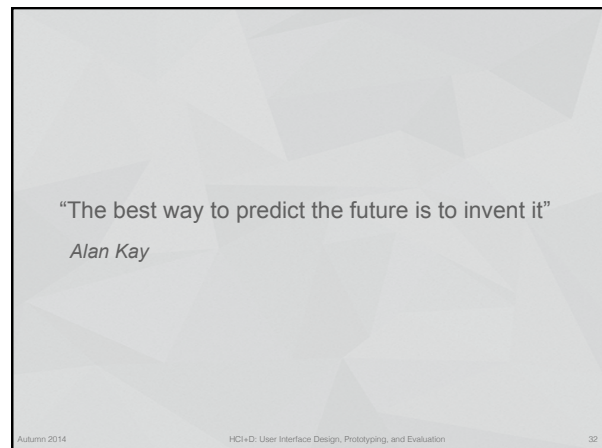
Next Week

- Lecture
  - 1) Design Discovery: Contextual Inquiry & Task Analysis
  - 2) Design Exploration

- Readings
  - Holtzblatt & Beyer, Contextual Design. In: *The Encyclopedia of Human-Computer Interaction*, 2nd Ed.

- Studio
  - Choose team projects (studio attendance mandatory)

- Homework
  - Assignment 1 – Project Proposal (due on Tuesday)

Autumn 2014   HCI+D: User Interface Design, Prototyping, and Evaluation   37