IN4MATX 133: User Interface Software

Lecture 1:
Introduction & History

I am thrilled that you have decided to take this class and that I get it to teach you!

Today's goals

By the end of today, you should be able to…

- Describe how society got to today's ubiquitous computing
- Hypothesize why web technology has become the de-facto tool for interface development
- Identify your course staff
- Summarize this course's goals and know how to find policies
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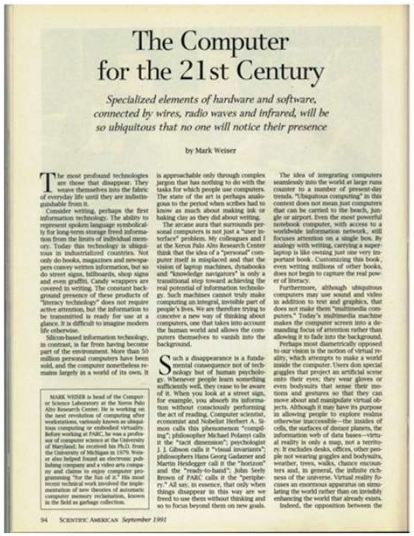
The Computer for the 21st Century

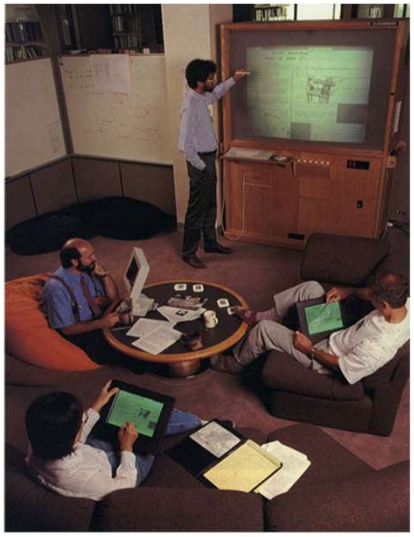
- By Mark Weiser, Chief Scientist, Xerox Parc
- Published in Scientific American, 1991
- Coined “Ubiquitous Computing”
  - Reflective and speculative
- https://dl.acm.org/citation.cfm?id=329126



The Computer for the 21st Century

Specialized elements of hardware and software, connected by wires, radio waves and infrared, will be so ubiquitous that no one will notice their presence

by Mark Weiser



Three waves of computing

Mainframe computing

Personal computing

Ubiquitous computing

Three waves of computing

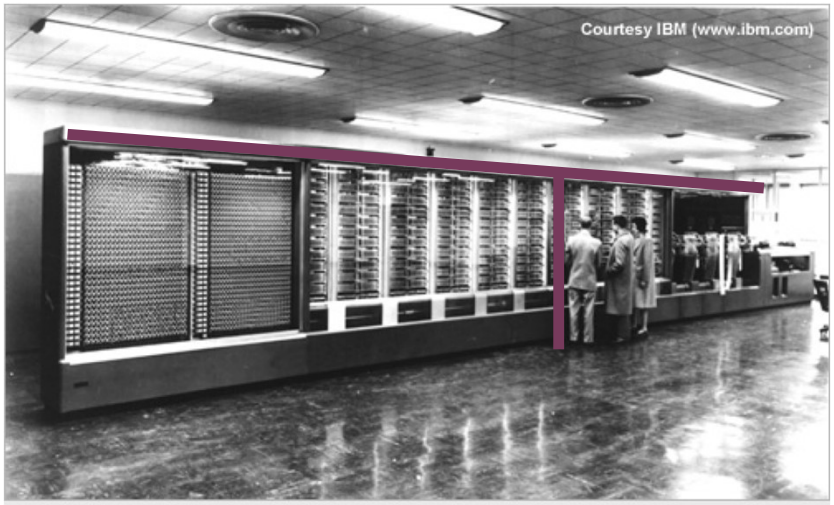
Mainframe computing

Personal computing

Ubiquitous computing

First wave: mainframe computing

- Harvard Mark I
- Large (55 feet wide, 8 feet high,5 tons)
- Expensive (enclosure alone was $50,000 in 1945!)
- Used to calculate implosion during the Manhattan Project

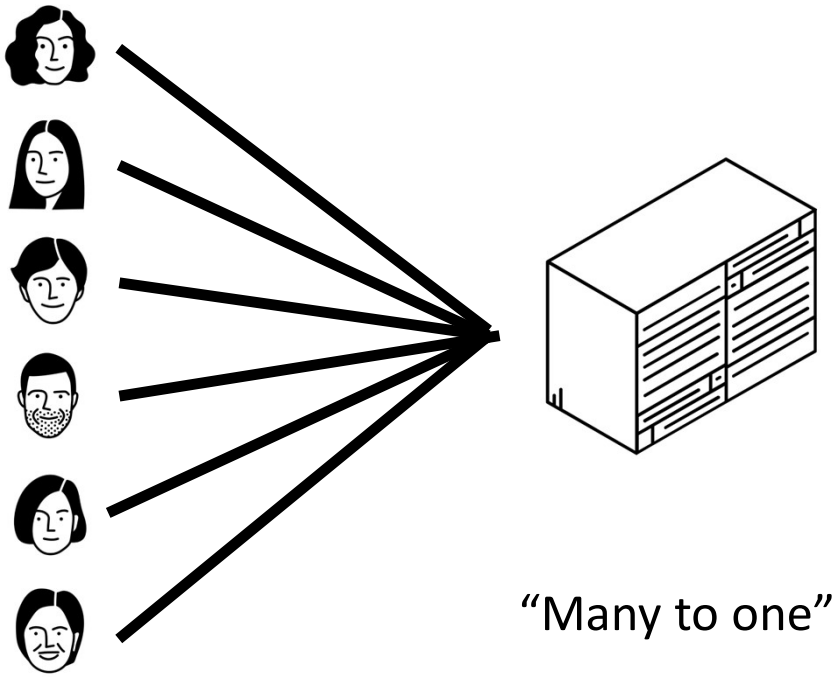


The Harvard Mark I

First wave: mainframe computing

- Batch processing
  - Write your program on punch cards
  - Wait your turn for the computer
  - Run program, hope it works
  - If it doesn't, you'll have to fix it and wait for your next turn
  - Efficient use of resources, but poor interactivity

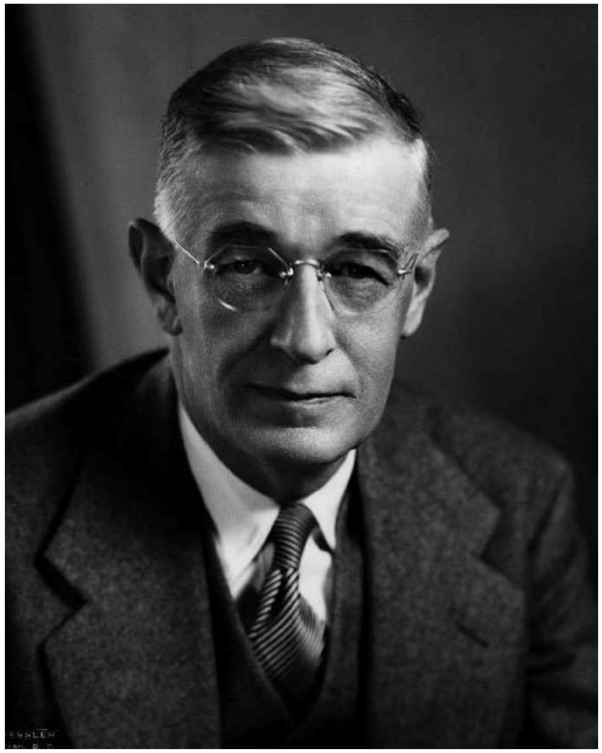
First wave: mainframe computing



"Many to one"

Vanneaver Bush

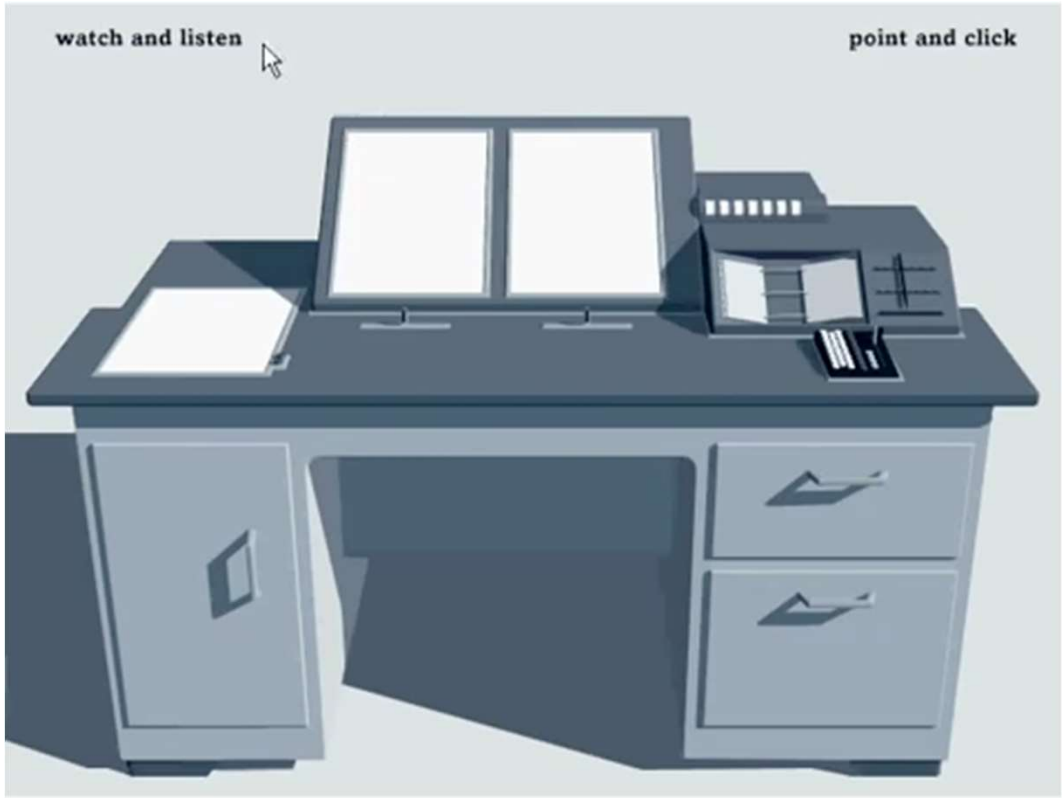
- Faculty at MIT
- Oversaw National Defense Research Committee, which led the Manhattan Project
- Post-war, helped define mission of the National Science Foundation
  - Federal government funds universities
  - Universities do basic scientific research
  - Research helps economy and defense



As We May Think

- Published in Atlantic Monthly, 1945
- http://www.theatlantic.com/magazine/print/1945/07/as-we-may-think/3881/
- In part, set out to define a post-war scientific research agenda
    - Speculative, not reflective

Memex (1945 speculative design)



https://www.youtube.com/watch?v=c539cK58ees
(video from 1995 animation presented at SIGIR, not from 1945)

Did you recognize any interactions that are commonly used today?

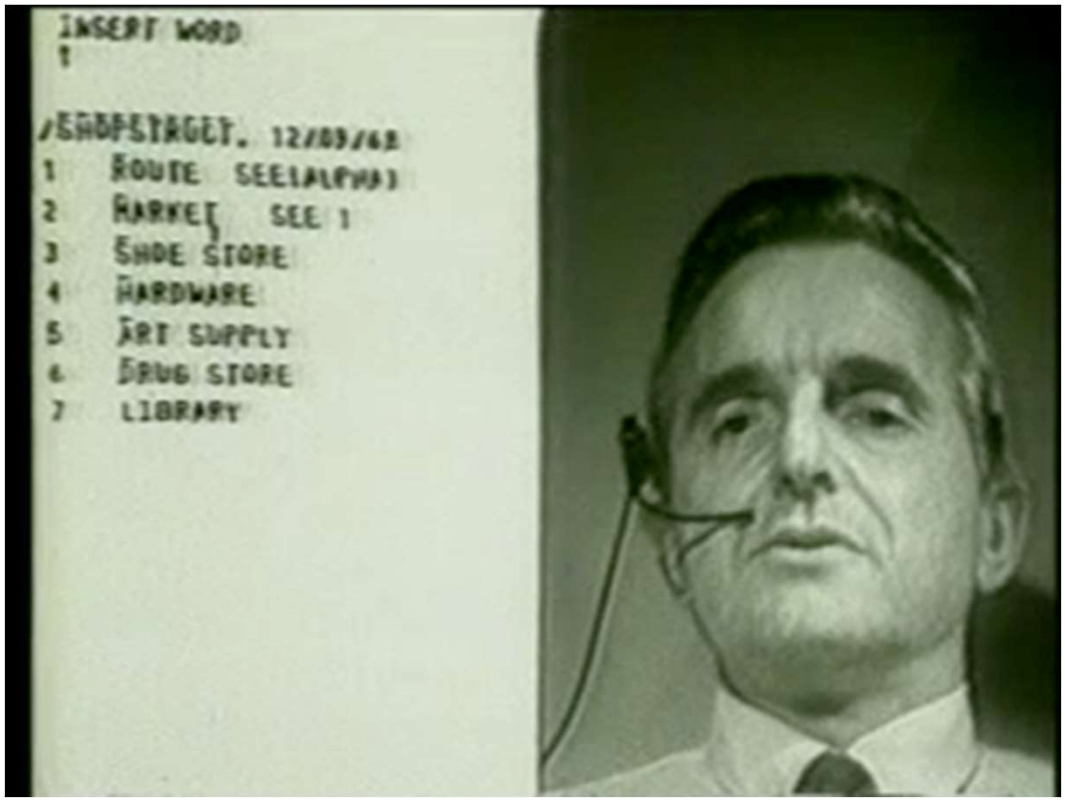
Memex (1945 speculative design)

- Linking information across devices and sources
  - Hypertext, the foundation of the web
- Pen-based annotation of primary sources

Command-Line interfaces (1960's)

- Originally used in a terminal connected to a mainframe
  - Was eventually integrated into personal computing (in Unix, etc.)
- A person could change execution based on output
- Enabled real-time debugging

Doug Engelbart's NLS (1968)

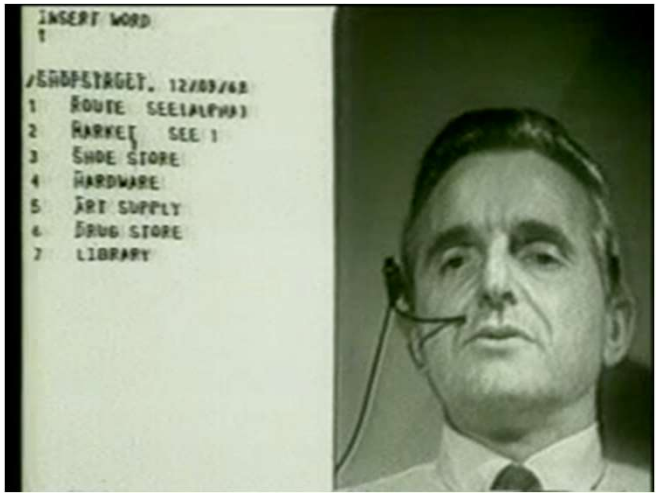


http://www.dougengelbart.org/firsts/1968-demo-interactive.html

Did you recognize any interactions that are commonly used today?

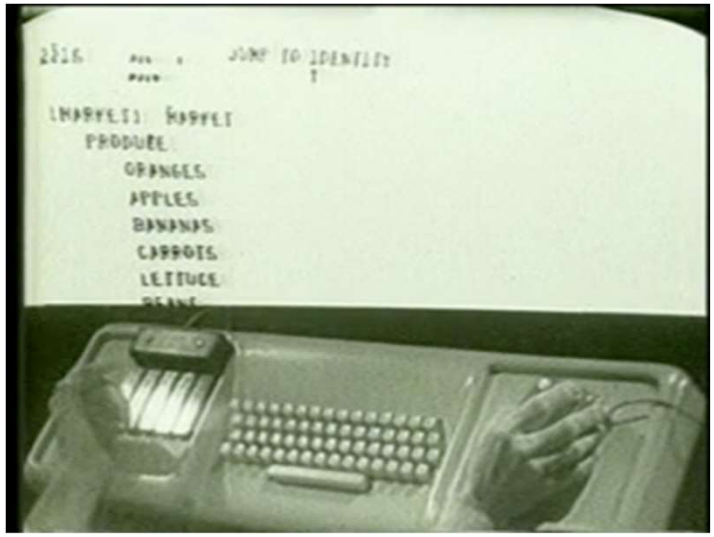
Doug Engelbart's NLS (1968)

- First working hypertext system
- Invention of the mouse
- Simple graphics
  (earlier systems had this,
  but used in a full system here)



Doug Engelbart's NLS (1968)

- It introduced other ideas as well
  - A chording keyboard
  - Remote collaboration
- Some people thought he "faked it"
- Others thought it was irrelevant because "the terminal can do the same"
- Engelbart Won Turing Award in 1997



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Course Overview

- Course staff introductions
- Administravia
- Topics covered
- A0 (due Monday)

Who we are

Professor Mark Baldwin

- Ph.D. Informatics,
  University of California, Irvine 2020
- Master of Human-Computer Interaction,
  Carnegie Mellon University 2013
- Started building websites when they
  looked like this ---------->

Jamie Lee(TA)
Kyuha Jung (TA)
Xinyu Zhang (TA)
Tim Twigg (Reader)

The syllabus

- Explains due dates/times, assignment policies, exam goals, etc.
- It probably answers your question
  - Please check it before you ask us
- In-person class on Monday and Wednesday
- Zoom class on Friday
  - Will focus on code and development
  - Attendance is optional

Staying in touch

- Web: https://inf133.markbaldw.in/
- Email us: See Syllabus
- Slack: See Syllabus
  - Information will go out to Zulip first!
- For the most part, Canvas will only be used for submission and grades.
- Think about your questions, if it is a personal matter, then reach out via email. Otherwise use Slack #general/#random streams!

Staying in touch

- Office hours:
  - Instructor by appointment
  - TA's by appointment
- Submission: clone starter code from GitHub Classroom
  - Zip up finished assignment, submit on Canvas
  - Unsure about Git or GitHub? Go to discussion on Tomorrow!
- YuJa: All weekly lectures will be uploaded to Canvas and linked in weekly notes page

Communication best practices

- Slack is best for assignment clarification and assistance
  - Please use the public channels to allow your peers to help
  - Direct messages to me are ok for now. But unless you ask a question during normal work hours, don't expect an immediate response.
  - Keep TA requests/questions in public channels as much as possible.
- Email is best for personal communication (personal concerns, grading questions)

Course goals

By the end of this course, you should be able to…

- Build webpages in HTML, CSS, and JavaScript
  which are sensitive to screen size and a person's abilities
- Build mobile apps in TypeScript frameworks, following design best practices
- Leverage external web APIs (databases, information sources) and
  device resources (photos, sensors) to lower development burden
  and enable new capabilities
- For a given design, choose appropriate devices to support
  and development frameworks to use

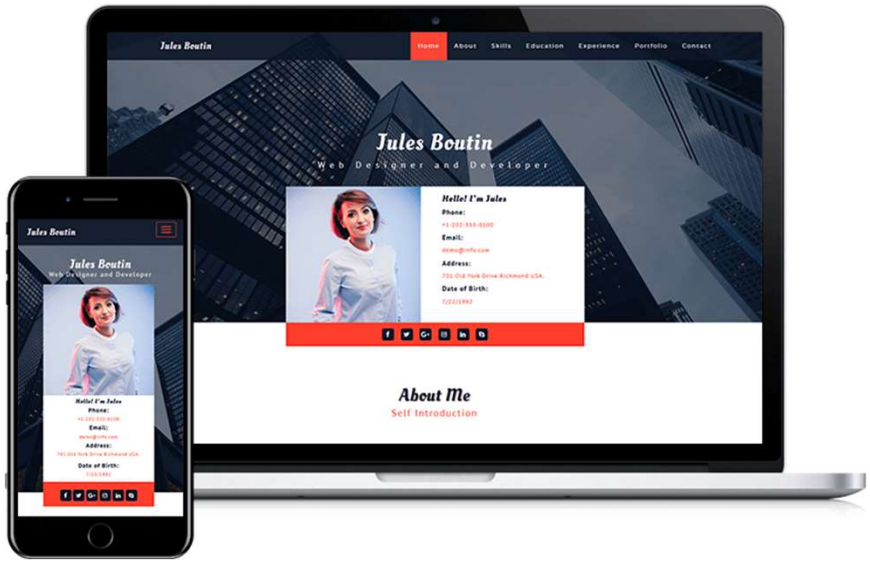
Assignments

- A1: Static web with HTML and CSS
- A2: Programming on the web
- A3: Web frameworks
- A4: Mobile development
- Final Project


A1

Responsive Website in HTML and CSS

- Learning goal: develop familiarity with HTML and CSS, which form the foundation of all web design
- Apply *responsive* design, or adapt to screen size and orientation



Participation

- Socrative quizzes:
  - Must complete 8 out of 10 quizzes
  - No make up quizzes
- Answer each other's questions on Slack!
  - You can also get participation extra credit this way
  - You can respond faster than we can
  - Often, you've experienced the same pitfalls

Discussion sections

- Are optional
- Are a great opportunity to get more depth on topics discussed in lecture
- Opportunity to engage live with TA's

Reflection

- This is an applied course with a lot of programming.
  - About half of the class will cover implementation techniques
  - The other half is theoretical concepts which inform design and development
- We'll teach principles and languages at a high level,
  but you'll need to pick up the specifics of APIs, packages, etc. on your own.
  - We're happy to help, but we haven't used every aspect of every API

Reflection

- We have high expectations
  - We want you to make cool things
- But we also care and will listen
  - Let us know how things are going, ask questions
- Be “all in”
  - If you’re not ready to commit, please drop now
  - Someone else will be happy to take your spot
- The more active you are the better the experience will be for everyone

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