Hall of Fame or Shame?

Later Versions of IE Fix This

Hall of Shame!

Later Versions of IE Fix This

Page setup for printing in IE5

- Page preview nice, but
- Problems
  - codes for header & footer information
    - requires recall
  - want recognition
    - no equivalent GUI
  - help is the way to find out, but not obvious

Page setup for printing in IE5
Hall of Fame or Shame?

Asiana Airlines interface for sending email or SMS from plane

Hall of Shame!

Asiana Airlines interface for sending email or SMS from plane

• Cool, but
  – text entry using this this input device is VERY tedious
  – crashes often

Who are We?

James Landay

• Professor in CSE at the University of Washington
  – formerly professor in EECS at UC Berkeley
  – spent 3 years as Director of Intel Labs Seattle
  – Dec 2011 finished 2.5 year sabbatical at Microsoft Research Asia
• Ph.D. in CS from Carnegie Mellon ’96
• HCI w/ focus on informal input (pens, speech, etc.),
  web design (tools, patterns, etc.), & Ubiquitous Computing (Ubicomp)
• Founded NetRaker, leader in web experience management (later sold to Keynote)
• Co-authored The Design of Sites with Doug van Duyne & Jason Hong
• Office Hours: Wed, 3-4 PM, 642 CSE & Mon 11 AM-12, Online
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Nikki Lee

• M.S. student in HCDE at the University of Washington
• B.S. in ECE from Olin College 2010
• HCI w/ focus on interaction design, ubicomp, web
• TAd CSE 440 x 2 and CSE 441
• Office Hours: Tue 1:30 - 2:30 PM, HCI Lab (605 CSE)
• Email: nblee at uw.edu
Human-Computer Interaction (HCI)

Human
- the end-user of a program
- the others they work or communicate with

Computer
- the machine program runs on
- split between clients & servers

Interaction
- user tells the computer what they want
- computer communicates results

User Interfaces (UIs)

- Part of application that allows people
  – to interact with computer
  – to carry out their task
- User vs. Customer vs. Client
  – user is a term only used by 2 industries → bad!
  – customer – person who will use the product you build
  – client – the company who is paying you to build it

HCI = design, prototyping, evaluation, & implementation of UIs

Why is HCI Important?

- Major part of work for “real” programs
  – approximately 50%
- Bad user interfaces cost
  – money
    - 5% satisfaction → up to 85% profits
    - finding problems early makes them easier to fix
  – reputation of organization (e.g., brand loyalty)
  – lives (Therac-25)
- User interfaces hard to get right
  – people are unpredictable
  – intuition of designers often wrong
Who Creates UIs?
A team of specialists (ideally)
- graphic designers
- interaction / interface designers
- information architects
- technical writers
- marketers
- program managers
- test engineers
- usability engineers
- researchers (ethnographers, etc.)
- software engineers
- hardware engineers
- industrial designers
- customers

How to Design and Build Good UIs

- UI Development process
- Usability goals
- User-centered design
- Design discovery
- Rapid prototyping
- Evaluation
- Programming

User Interface Development Process

Design
- Design Discovery
  - Customers, Products, Business, Marketing
- Design Exploration
  - Customers, Products, User, Business, Marketing
  - Customers, Products, User, Technology
  - Customers, Products, User, Architecture

Evaluate
- Evaluate
  - Customers:
    - Roles (Who)
    - Tasks (What)
    - Context (Stories)
  - Marketing:
    - Business Priorities
    - Messages
  - Technology:
    - Products
    - Architecture
  - Design:
    - Leading/competing technologies

Production
- Proposal:
  - Design Problem Statement
  - Targeted User Roles (Who)
  - Targeted User Tasks (What)
  - Design Direction Statements
- Specification:
  - Based on customer feedback
  - Foundation in product reality
  - Refined Design description

Storyboard

UI Design
Design is driven by requirements
- what the artifact is for
- not how it is to be implemented
- e.g., phone not as important as mobile app.

A design represents the artifact
- for UIs these representations include
  - screen sketches or storyboards
  - flow diagrams/outline showing task structure
  - executable prototypes
- representations simplify

UI Design Representations

Flow / Site Maps

Storyboards

Schematics

Mock-ups

Iteration
At every stage!
Usability

According to the ISO:
The effectiveness, efficiency, and satisfaction with which specified users achieve specified goals in particular environments

This does not mean you have to create a “dry” design or something that is only good for novices—it all depends on your goals.

Usability/User Experience Goals

- Learnable
  - faster the 2nd time & so on
- Memorable
  - from session to session
- Flexible
  - multiple ways to do tasks
- Efficient
  - perform tasks quickly

Design Discovery

Task Analysis & Contextual Inquiry

- Observe existing work practices
  - augment with self-report tools (e.g., ESM)

Video Prototyping

- Illustrate how users will interact w/ system
- Unlike brainstorming…video prototyping contracts the design space

User-centered Design

“Know thy User”

- Cognitive abilities
  - perception
  - physical manipulation
  - memory
- Organizational / educational job abilities & skills
- Keep users involved throughout
  - developers working with target customers
  - think of the world in users terms
  - not technology-centered/feature driven

We noticed that you just finished your morning walk, how is your breathing rate?

1. I feel out of breath
2. I’m breathing heavier than normal
3. I had to stop walking to catch my breath

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Rapid Prototyping

- Build a mock-up of design so you can test
- Low fidelity techniques
  - paper sketches
  - cut, copy, paste
- Interactive prototyping tools
  - HTML, Visual Basic, Flash, Denim, SketchFlow, Balsamiq, etc.
- UI builders
  - Expression Blend + Visual Studio, etc.

Evaluation

- Test with real customers (participants)
  - with interactive prototype
  - low-fi with paper "computer"
- Build models
  - GOMS
- Low-cost techniques
  - expert evaluation
  - walkthroughs
  - online testing

Goals of the Course

1) Learn to design, prototype, & evaluate UIs
   - the needs & tasks of prospective customers
   - cognitive/perceptual constraints that affect design
   - technology & techniques used to prototype UIs
   - techniques for evaluating a user interface design
   - importance of iterative design for usability
   - how to work together on a team project
   - communicate your results to a group
     - key to your future success
2) Understand where technology is going & what UIs of the future might be like

Course Format

- Interactive lectures
- Quarter long project & homework
- Readings
- All material will be online
  - slides, exercises, readings, schedule
- Have fun & participate!
How HCI Fits into CS Curriculum

- Most courses for learning technology
  - compilers, operating systems, databases, etc.
- HCI concerned with design & evaluation
  - technology as a tool to evaluate via prototyping
  - skills will become very important upon graduation
    - complex systems, large teams
    - don’t look for large immediate impact in other CS courses

Project Proposal (due Thursday)

- Each of you will propose an interface idea
  - fixing something you don’t like or a new idea
- Groups
  - 4-5 students to a group
  - work with students with different skills/interests
  - groups meet with teaching staff every 2 weeks
- Cumulative
  - apply several HCI methods to a single interface

Project Process Overview

- Project proposal (individual)
  - due Thursday (January 10)
- Break-up into groups the following week
- Project contextual inquiry & sketches
- Project task analysis & sketches
  - based on CI & field work
  - In class presentations & critiques
- Design sketching & concept videos
  - i.e., rough proposals that can & will change
- Low fidelity prototyping & user testing
- In class presentations & critiques

Project Process Overview

- Rapid prototype using tools
- Final presentations & project fair with industry guests

Traffic Monitor

Trippin’
Traffic Monitor

- Alert icons
- Congestion Information (traffic light metaphor)
- Audible reports about alerts
- Pan
- Zoom
- Map view preset (radio button metaphor)
- Driver's location
- Center on driver
- Volume
- Audible reports about alerts

Otto: Location-based Photos

Bus Buddy

Bus Buddy

iWorkout
MyTransTracker

StepIntuit

Take Me There

BikeNav

CarbonShopper

StyleEye
Project Themes

- Mobile computing (e.g., phone or tablet)
- Projects should address one or more of the following briefs
  - Change
    - Transform your or your family’s behavior
    - Past examples: fitness, sustainability, etc.
  - Crowd-sourced mobile AI
    - Use Mechanical Turk to give an application perfect vision, speech recognition, sorting data, etc.
    - Design two UIs: 1 for end-user and 1 for Turk worker
  - Creativity
    - Help people be more creative in their everyday live

Books

- The Design of Sites by van Duyne, Landay, & Hong
  - online copies of the 4-5 chapters we will use
- We will also hand out other papers, give you web links, & refer to lecture slides
- Recommended textbooks
  - order from Amazon.com (link off class web page)
- Other recommended books on web page

Assignments

- Individual
  - 3 written + in-class studio + one talk each
  - handed in via Collect It dropbox
- Group
  - 6 written assignments
  - 3 presentation/demos with the write-ups + poster
  - all group work handed in on Web
  - group web site & blog

Grading

- A combination of
  - midterm (20%)
  - individual assignments & presentation (15%)
  - group project (60%)
    - demos/presentations/poster (group component)
    - project write-ups and exercises
    - ratings given by other team members & class
  - in class participation (5%)
- No curve
- No final (though late midterm)

Tidbits

- Late Policy
  - no lates on group assignments
  - individual assignments lose one letter grade/day
- Cheating policy
  - will get you an failing grade in the course

Administrivia

- Roll
- Waiting list for those who want to add
  - sort out after 1st week
Summary

- HCI an important part of most software produced today
- Getting the interface right is hard, but...
- Solution in *Iterative Design* including repeated cycles of
  - Design
  - Prototyping
  - Evaluation

Next Time

- Early Visions of HCI
- Read
  - *As We May Think* by Vannevar Bush
  - *Tools For Thought* Ch 9 (Engelbart Demo)

Introductions

- Name
- Major
- What you want to get out of the class