L31: Conclusion

- last nanoquiz today
- project madness on Wed
- GR6 due Thurs
no angle-of-attack indicator
screens going blank from lack of accurate information
side stick vs. yoke

http://www.telegraph.co.uk/technology/9231855/Air-France-Flight-447-Damn-it-were-going-to-crash.html
Today’s Topics

• Recap
• What to do next
User Interfaces Are Hard to Design

- You are not the user
  - Most software engineering is about communicating with other programmers
  - UI is about communicating with users
- The user is always right
  - Consistent problems are the system’s fault
- …but the user is not always right
  - Users aren’t designers
Iterative Design

- UI development is an iterative process

  Design → Evaluate → Implement

- Any risky design problem (UI or not) should be approached iteratively
Spiral Model

- Use throw-away prototypes and cheap evaluation for early iterations

Spring 2012 6.813/6.831 User Interface Design and Implementation
Usability Is Multidimensional

- Usability = how well users can use the system’s functionality
  - Learnability: is it easy to learn and remember?
  - Efficiency: once learned, is it fast to use?
  - Safety: are errors few and recoverable?
- Dimensions differ in importance
  - Depending on users and tasks
Learnability

Consistency
Metaphor
Affordance
Mapping
Speak the user’s language
Learnability

Visible affordances
Information scent
Visible state
Locus of attention
Feedback
Efficiency

Fitts’s Law
Steering Law
Shortcuts
History
Aggregation
Modes
Slips
Lapses
Memory burden
Error messages
Safety

Enter a Card Message

There is a 210 character limit for your message due to the size of the card. Note: please do not use any special symbols like ".".

Cancel

Undo

CRUD

No arbitrary data limits
Graphic Design & Layout

Color design
Typography
Simplicity
Visual variables
White space
Gestalt grouping
Alignment
Balance & symmetry
Design Techniques

- User & task analysis
- Design sketches
- Storyboards
- Paper prototypes
- Computer prototypes
- Wizard of Oz prototypes
Evaluation Techniques

- Keystroke-level models
- Formative user testing
- Heuristic evaluation
- Controlled experiments
- Web-scale A/B testing
Implementation Techniques

- GUI toolkits come and go
  - HTML/CSS/Javascript/jQuery today
  - Who knows what's coming tomorrow
- Remember what to look for in a GUI toolkit
  - View hierarchy
  - Component, stroke, pixel output
  - Input event handling
  - Automatic layout
  - Internationalization
  - Accessibility
What To Do Next: Courses

- 6.835 Intelligent Multimodal Interfaces
- 6.079 Engineering Innovation and Design
- 16.470J Statistical Methods in Experimental Design
- 6.470 IAP Web Programming Contest
- 6.570 IAP Mobile Programming Contest
- MAS.672 New Paradigms for HCI
- MAS.834 Tangible Interfaces
- MAS.630 Affective Computing
- MAS.712 Creative Learning Technologies
- ...and many other Media Lab courses
The MIT HCI Landscape
for your next UROP, Super-UROP, AUP, or MEng
Top Grad Schools in HCI

- MIT
  - EECS or Media Lab
- CMU
  - HCI or CSD
- Stanford
- Berkeley
- UW
  - CSE or iSchool

- plus Maryland, Georgia Tech, Illinois, Cornell
A building, a research paper, a slide presentation, a book, a parking lot, a wiki page...

... all pose UI design problems... have particular users with particular tasks... and can be tackled with UI design principles and user-centered design (cheap prototyping, evaluation).