USER INTERFACE DESIGN & IMPLEMENTATION

INSTRUCTORS
Hyowon Lee
Prof Larry Young

	Monday (11:30am – 1pm)	Tuesday (4:30 – 6pm)	Thursday (11am – 1pm)
Week 1 (23 Jan)	Introduction/ background	User classification	Project overview, team up
Week 2 (30 Jan)	CNY holiday	UI design concepts	Project - scoping
Week 3 (6 Feb)	UI design concepts	UI design concepts	Project - scoping
Week 4 (13 Feb)	UI design concepts	Understanding Users (Industry)	Project - scoping
Week 5 (20 Feb)	UI concepts / Impact	Evaluation	Project
Week 6 (27 Feb)	Evaluation	Evaluation	Mid-term report/presentation
Week 7 (6 Mar)	Recess Week		
Week 8 (13 Mar)	Project	Project	Project
Week 9 (20 Mar)	Project	Project	Project
Week 10 (27 Mar)	Prof Young Special Lec 1	Prof Young Special Lec 2	Project
Week 11 (3 Apr)	Prof Young Special Lec 3	Prof Young Special Lec 4	Project
Week 12 (10 Apr)	Project	Project	Project
Week 13 (17 Apr)	Project	Project	End-term report/presentation
Week 14		Final Exam	

Assessment

Mid-term presentation and report	**20%**
Presentation	5%
Report (project scope, vision, design rationale)	15%
Final presentation, report, demonstration	**30%**
Presentation	10%
Report	
Design rationale	10%
Evaluation	10%
Continuous assessment	**30%**
In-class activity	10%
Participation, progress, discussion	20%
Final exam	**20%**

CONTINUOUS ASSESSMENT

- Continuous Assessment (30%)
  - In-class activity
  - Short reports on individual contribution (1-pager)
  - Continuous interactions during the class
  - Evidence of sketching and idea development in project

Mid-term Report
Due 3 March

- Application area being addressed
- Usability issues currently faced
  - Literature review + critique + discussion
- **UI concept/principle used to frame the issue**
- Discussion on how the re-design might solve the issue and/or change our living with technology
- Plan for design, implementation and evaluation
- Team members' expected contributions

Mid-term Presentation

- Each team presents for 10 minutes
  - Summarise the report
  - Show why this re-design is a worthwhile endeavour
  - Convince how it will positively influence our day-to-day life
- 3-minute Q&A (by instructor and students)

WHAT WILL WE LEARN TODAY?

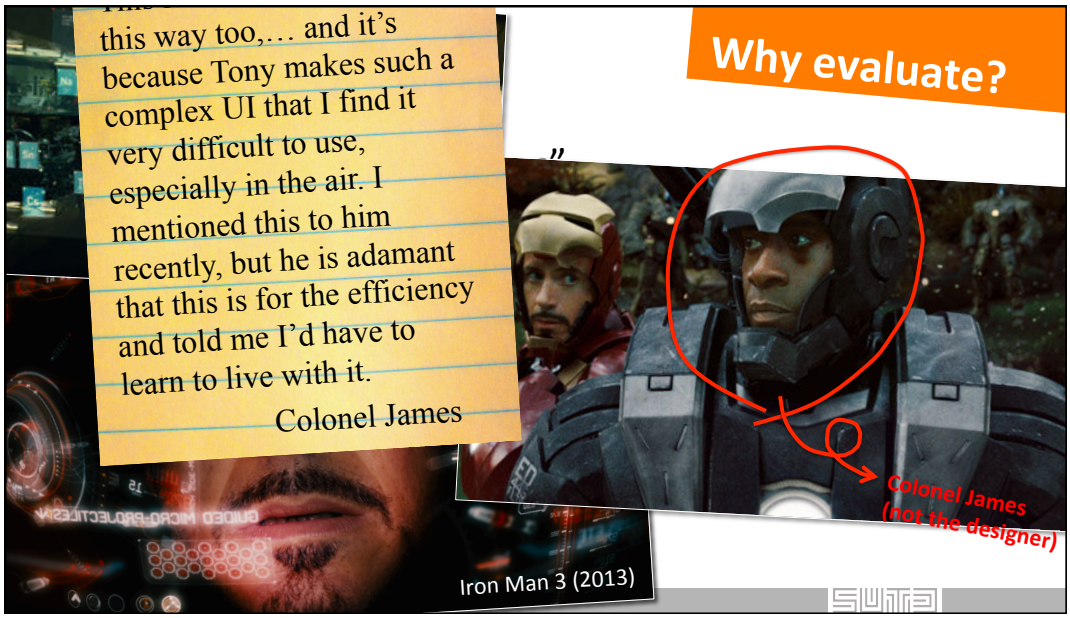
How to evaluate a UI's design quality

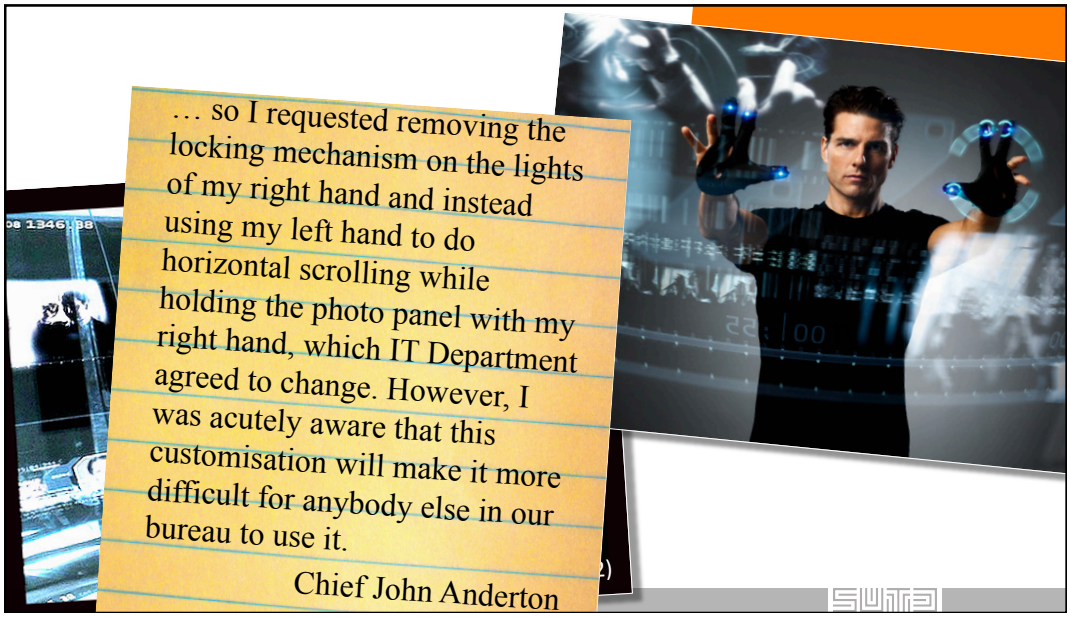
DISCUSSION

After designing… how do you know if you designed well?

Why evaluate?

- Fix the "usability bugs"
- Justify existing products/services
- Provide better products/services
- Improve understanding of our creation


this way too,… and it's because Tony makes such a complex UI that I find it very difficult to use, especially in the air. I mentioned this to him recently, but he is adamant that this is for the efficiency and told me I'd have to learn to live with it.
Colonel James
Why evaluate?
"
Colonel James (not the designer)
Iron Man 3 (2013)


… so I requested removing the locking mechanism on the lights of my right hand and instead using my left hand to do horizontal scrolling while holding the photo panel with my right hand, which IT Department agreed to change. However, I was acutely aware that this customisation will make it more difficult for anybody else in our bureau to use it.
Chief John Anderton

How to evaluate

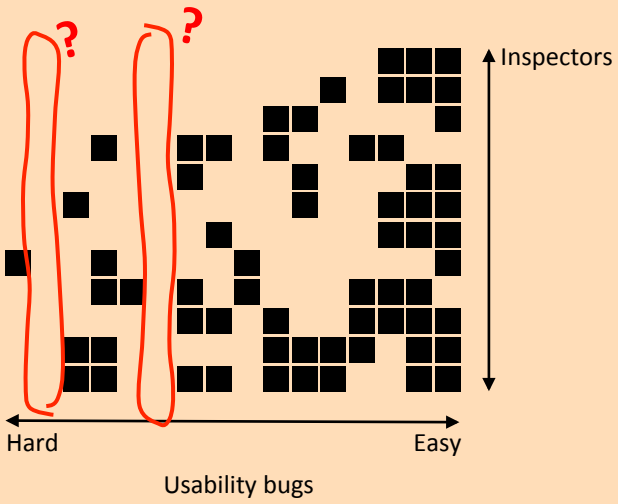
1. Clarify who the intended target users are
2. Go through the UI and check whether any design guidelines are violated

➡ Heuristic inspection

Heuristic Inspe

- Purpose: find
- Design expe
  finds the bu
  e.g. checkin
  inconsisten
- Reasonabl
- Depends

More thar



ACTIVITY
HEURISTIC INSPECTION

First, in pair (3 min):

1. Choose a commonly-used app or website
2. Decide a typical task of that app/website

Second, individually (7 min):

3. Go through the task, step by step, while checking on our design guideline card)
4. At each step, write down where the design violates the guidelines

Then in pair (2 min):

5. Compare with your partner

Heuristic Inspe

- Purpose: find
- Design expe
  finds the bu
  e.g. checkin
  inconsisten
- Reasonabl
- Depends

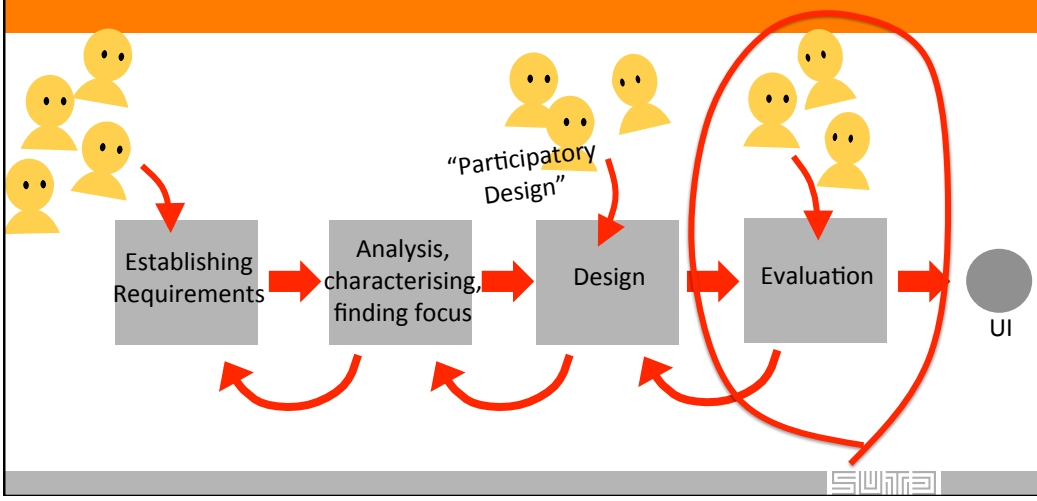
More thar

Problems of an "expert"

- Has a biased area of expertise/ experience
- Lacks domain knowledge
- Lacks the user's point of view

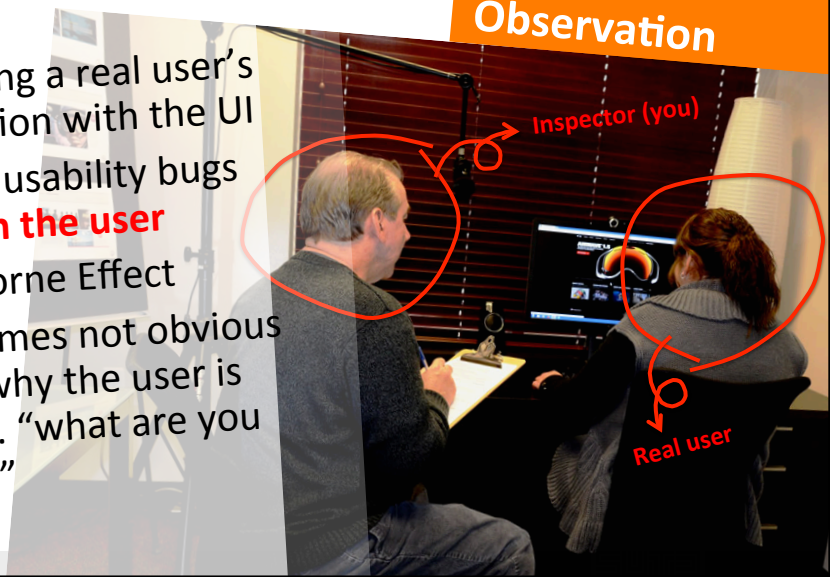
➡ Involving the **real users** necessary

User-Centred Design



Observation

- Observing a real user's interaction with the UI
- Finding usability bugs **through the user**
- Hawthorne Effect
- Sometimes not obvious what/why the user is doing… "what are you doing?"



Think-aloud
(an extension of Observation)

- Give a task, then ask to speak while doing the task
- Use notebook, checklist, audio/video recorder…
- Inspector, please be quiet

Think-aloud
(an extension o

- Give a
  the tas
- Use nc
  record
- Inspec

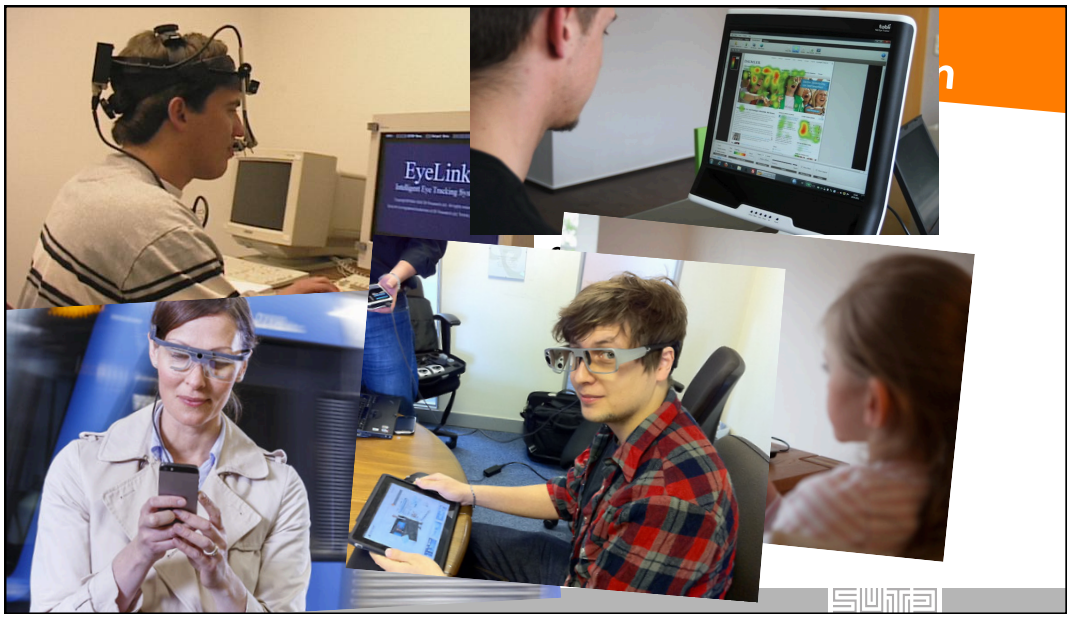
Problems of Think-aloud

- Users go quiet when thinking hard
- Talking bothers their work (different from what they normally do)

→ *Intrusive!*

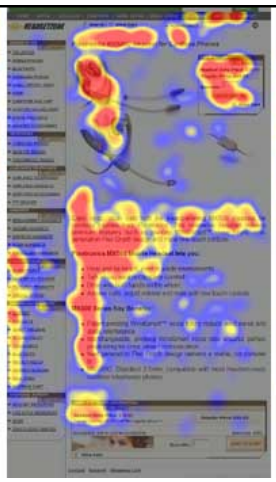
Indirect Observation
Interaction logging

- Incorporating the logging in the system (e.g. web server log data)
- Screen recording (e.g. Camtasia)
- Eye-tracking (e.g. Tobii)


EyeLink


Lee H, Ferguson P, Gurrin C, Smeaton A.F, O'Connor N and Park H. Balancing the Power of Multimedia Information Retrieval and Usability in Designing Interactive TV. uxTV 2008 - International Conference on Designing Interactive User Experiences for TV and Video, Mountain View, CA, 22-24 October 2008.

an article in the "about us" section of a corporate website



a product page on an e-commerce site

search engine results page

© Jakob Nielsen's Alertbox April 17, 2006

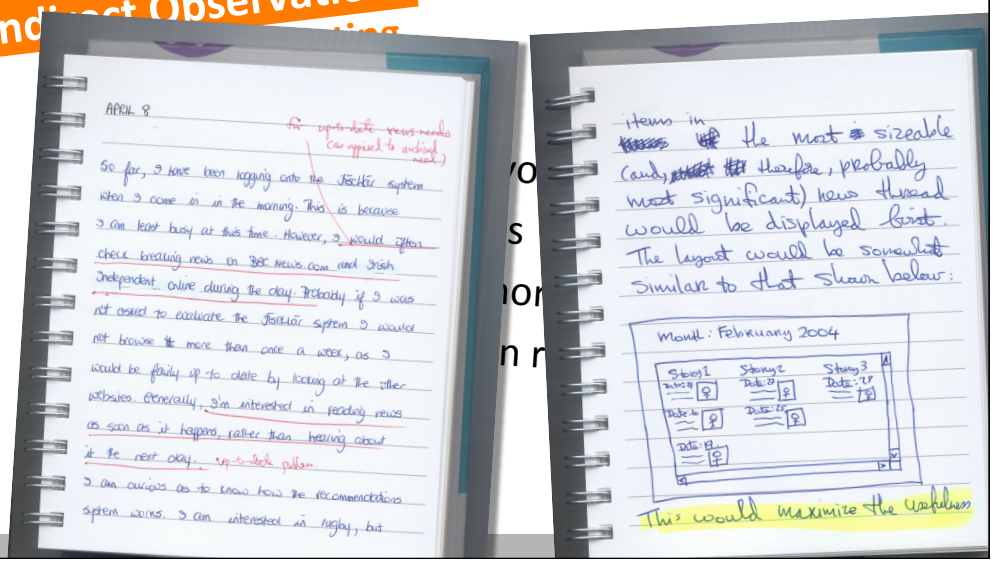
Indirect Observation
Interaction logging

- Incorporating the logging in the system (e.g. web server log data (sample))
- Screen recording (e.g. Camtasia)
- Eye-tracking (e.g. Tobii)
- Ethical issue…
- When it comes to "why"…

Indirect Observation
Self-reporting

- Incident diary, voice recorder…
- Captures "why"s
- Bothers user's normal activity
- Helps user's own reflection

Indirect Observation



Interview & Questionnaire

- Obtains "why"
- Needs interview skill, questionnaire design skill

What users say VS. What users do

What users say why they do ≠ Why they really do what they do

➡ We need to *interpret* users' comments

Interview & Questionnaire

- Obtains "why"
- Needs interview skill, questionnaire design skill
- **Interpret** the response
- Very usefully:
  - Interaction logging analysis + follow-up interview/questionnaire

naire

Designing a questionnaire

- Make questions clear and specific
- When possible, ask closed questions and offer a range of answers
- General questions first
- Avoid complex questions
- When scale is used, make sure they don't overlap

What is your age? _____

What is your age?

- ❑ < 20
- ❑ 20 - 25
- ❑ 25 - 30
- ❑ 30 - 35
- ❑ 35 - 40
- ❑ 40 - 45
- ❑ > 45

What is your age?

- ❑ ≤ 20
- ❑ 21 - 25
- ❑ 26 - 30
- ❑ 31 - 35
- ❑ 36 - 40
- ❑ 41 - 45
- ❑ ≥ 45

(Likert scale)

The use of colour is excellent (where 1 represents strongly agree and 5 represents strongly disagree)

❑1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

(Semantic differential scale)

For each pair of adjectives, place a cross at the point between them that reflects the extent to which you believe the adjectives describe the UI. You should place only one cross on each line.

- Attractive ——— Ugly
- Clear ——— Confusing
- Dull ——— Colourful
- Exciting ——— Boring
- Annoying ——— Pleasing
- Helpful ——— Unhelpful
- Poorly designed ——— Well designed

Designing a questionnaire

- Make questions clear and specific
- When possible, ask closed questions and offer a range of answers
- General questions first
- Avoid complex questions
- When scale is used, make sure they don't overlap
- Scale should be consistent (e.g. 1 as small)
- Trade-off: length of the questionnaire

Ready-made questionnaires

- **QUIS**: Quesionnaire for User Interaction Satisfaction (U of Maryland)
  http://www.lap.umd.edu/QUIS/index.html
- **SUMI**: Software Usability Measurement Inventory
- **MUMMS**: Measuring the Usability of Multi-Media Systems (U of Cork, Ireland)
  www.ucc.ie/hfrg/questionnaires/
- **SUS**: "Quick and Dirty" System Usability Scale
  http://www.usability.gov/how-to-and-tools/methods/system-usability-scale.html

End of Slides