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 (24 Apr)	Final Exam		

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USER INTERFACE DESIGN AND IMPLEMENTATION

WEEK 1 - SESSION 2

DISCUSSION

"Is the **Photoshop** UI well-designed?"

WHAT WILL WE LEARN TODAY?

- Understanding what a "good" UI is
- **User classification**
- Knowing what available knowledge we can use to design a "good" UI

"Good" UI

"Wow, this website is stunning."

"This app is very easy to use."

"That's my favourite gadget, because…"

"I think it needs to be more user-friendly"

"This online booking is really frustrating ☹"

"Good" UI

"Wow, this web

"This app is ver

"That's my favo

"I think it need

"This online b

Heckel's Law: The quality of the user interface of an appliance is relatively unimportant in determining its adoption by users if the perceived value of the appliance is high.

Derrett, N. (2004) Heckel's law: conclusions from the user interface design of a music appliance – the bassoon. Personal and Ubiquitous Computing, 8(3-4), pp208-212

"Good" UI

A: "Wow, this website is stunning."
B: "Well, not to me…"
A: "This app is very easy t…
B: "Really? I couldn't … out how to…"
"That's m… …dget, because…"
…us to be more user-friendly"
"This online booking is really frustrating ☹"

Context Diversity

A good UI for me might not be a good UI for you?

Context Diversity

- User difference
  - Learning style
  - Personality traits
  - Motor skill
  - Memory
  - Preference
  - Past experience
  - Culture
  - Language
  - ⋮

Personality trait influences user's preference, reaction, behaviour and performance

Briggs-Myers scale (based on Jung Typology)

- Extraversion vs. Introversion
- Sensing vs. Intuition
- Thinking vs. Feeling
- Judging vs. Perceiving

http://www.humanmetrics.com/

Context Diversity

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  - Learning style
  - **Personality traits**
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Personality trait influences user's preference, reaction, behaviour and performance

Five-Factor Model of personality

- Neuroticism – Sensitive/Nervous vs. Secure/Confident
- Extraversion – Outgoing/Energetic vs. Shy/ Withdrawn
- Openness to experience – Inventive/ Curious vs. Cautious/Conservative
- Agreeableness – Friendly/Compassionate vs. Competitive/Outspoken
- Conscientiousness – Efficient/Organised vs. Easy-going/Careless

Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. Annual Review of Psychology, 41, 417-440.

Context Diversity

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  - ⋮

Personality trait influences user's preference, reaction, behaviour and performance

E.g.: People with high emotional instability tends to give up information searching more easily*

E.g.: Extravert people tend to have less in-depth analysis on information*

*Long experience in searching reduces the influence of personality

Context Diversity

- User difference
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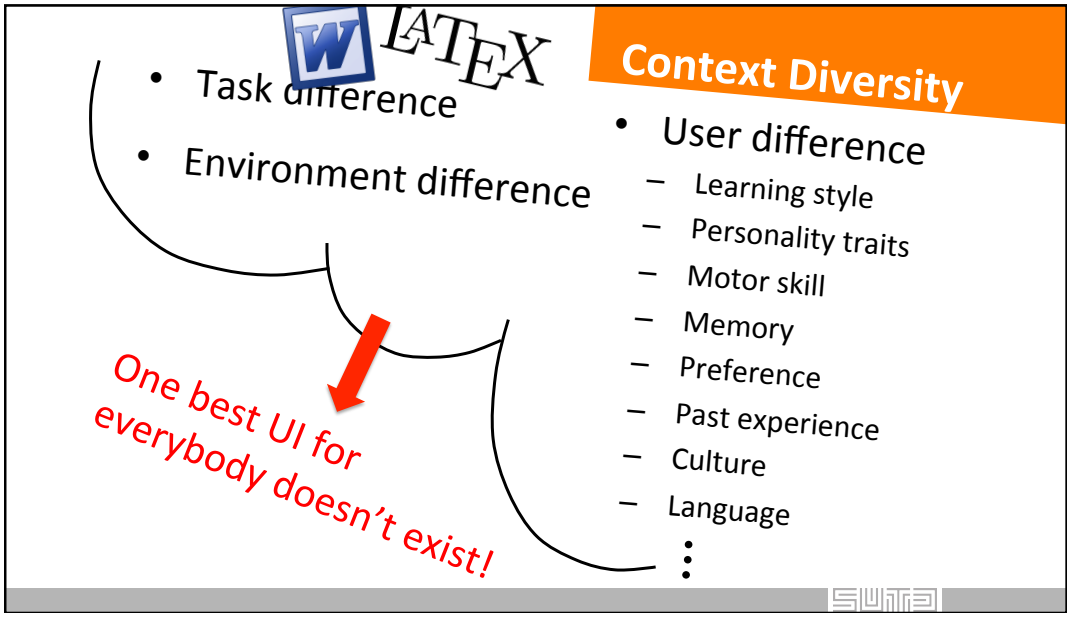


"Good" UI

What is a "good" user interface?

➡ "Good" UI is a UI suitable
for its intended **target users**
trying to do a **specific task**
in a **specific environment**

"Good" UI

Target users

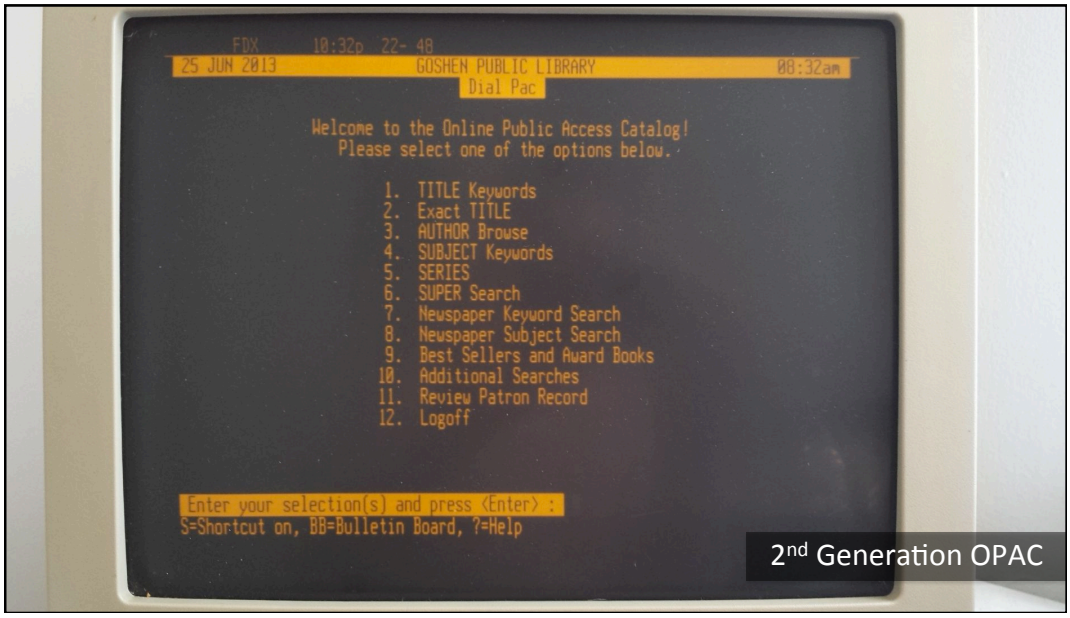
Narrow down to specific group

User Classification

- E.g. a user is writing a report using a word processor…
- E.g. a user is searching for information on medical problem using Google…

Expert user vs. Novice user

… but Expert or Novice in what?



2nd Generation OPAC

User Classification

… but Expert or Novice in what?

in the familiarity with the app?

in the use of iPhone?

in my knowledge on K-pop?

User Classification

- **Computer skill & general OS knowledge**
  - Window swapping, moving, scrolling, click vs. double-click, swiping, back home, short-cut keys, etc.
- **Knowledge on the software/app in concern**
  - Menu structure, where to find what, within-page searching, etc… i.e. how to use the app
- **Knowledge on the task (= domain knowledge)**
  - Terminology, major topics, authoritative figures and names, etc.

User Classification

Computer (OS) skill	Knowledge on the app	Domain knowledge	
GOOD	GOOD	GOOD	→ "Expert user"
GOOD	GOOD	POOR	
GOOD	POOR	GOOD	
GOOD	POOR	POOR	→ "Computer literate"
POOR	GOOD	GOOD	
POOR	GOOD	POOR	
POOR	POOR	GOOD	
POOR	POOR	POOR	→ "Novice user"

User Classification

Who are your target users?

General Guidelines

Common sense, research findings, designer's experience, other disciplines… incorporating ***design principles***

From Jane Eyre, Chapter 1, Charlotte Bronte

There was no possibility of taking a walk that day. We had been wandering, indeed, in the leafless shrubbery an hour in the morning; but since dinner (Mrs. Reed, when there was no company, dined early) the cold winter wind had brought with it clouds so sombre, and a rain so penetrating, that further out-door exercise was now out of the question.

I was glad of it: I never liked long walks, especially on chilly afternoons: dreadful to me was the coming home in the raw twilight, with nipped fingers and toes, and a heart saddened by the chidings of Bessie, the nurse, and humbled by the consciousness of my physical inferiority to Eliza, John, and Georgiana Reed. The said Eliza, John, and Georgiana were now clustered round theirmama in the drawing-room: she lay reclined on a sofa by the fireside, and with her darlings about her (for the time neither quarrelling nor crying) looked perfectly happy. Me, she had dispensed from joining the group; saying, "She regretted to be underthe necessity of keeping me at a distance; but that

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General Guidelines

Common sense, research findings, designer's experience, other disciplines... incorporating ***design principles***

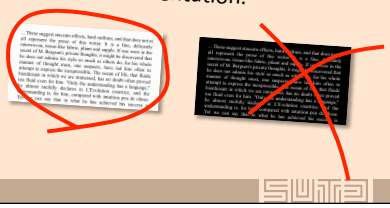
Empirical study into heuristics

User study:

Snyder, Harry L., Decker, Jennie J., Lloyd, Charles J.C., and Dye, Craig. Effect of image polarity on VDT task performance. Proceedings of Human Factors Society - 34th Annual Meeting, Santa Monica, CA, 1990.

Result shows that:

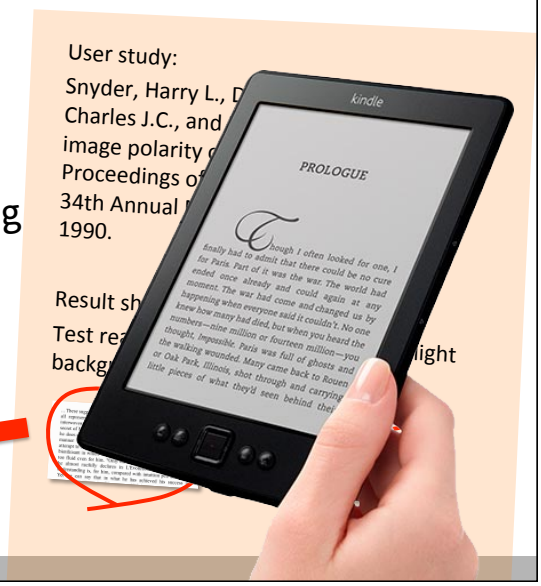
Test readers read faster dark text on light background orientation.

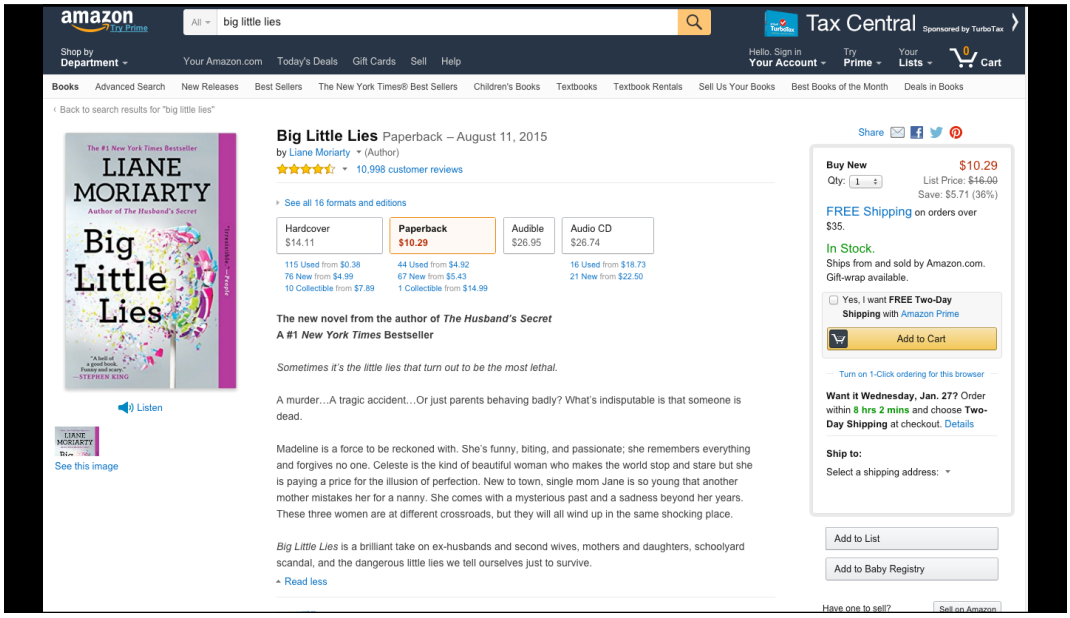


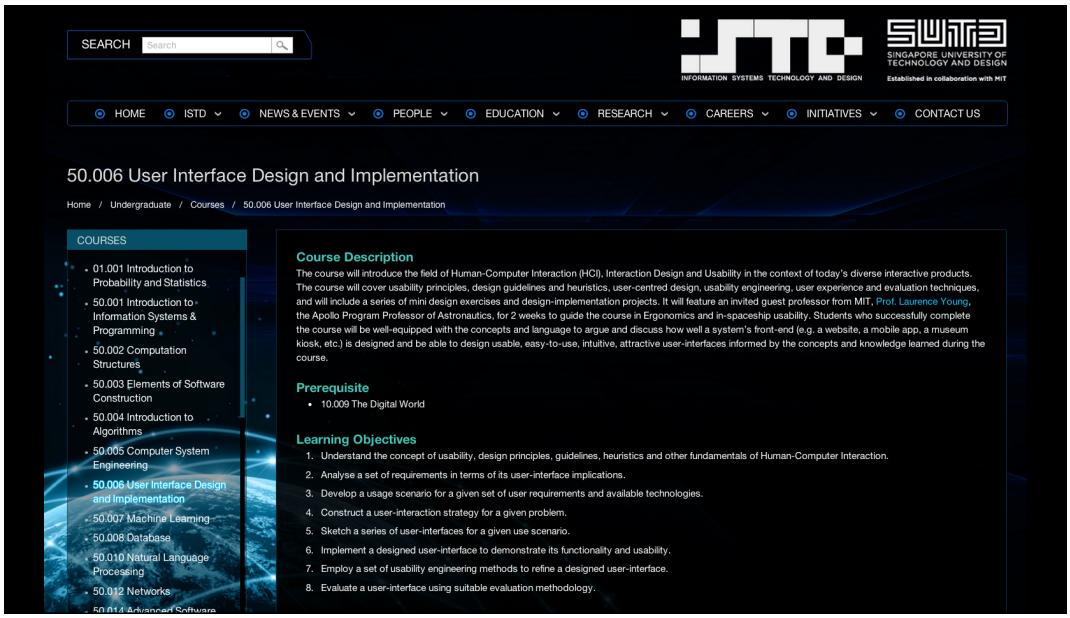
General Guidelines

Common sense, research findings, designer's experience, other disciplines… incorporating ***design principles***

Empirical study into heuristics



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COURSES
01.001 Introduction to Probability and Statistics
50.001 Introduction to Information Systems & Programming
50.002 Computation Structures
50.003 Elements of Software Construction
50.004 Introduction to Algorithms
50.005 Computer System Engineering
50.006 User Interface Design and Implementation
50.007 Machine Learning
50.008 Database
50.010 Natural Language Processing
50.012 Networks
Course Description
The course will introduce the field of Human-Computer Interaction (HCI), Interaction Design and Usability in the context of today's diverse interactive products. The course will cover usability principles, design guidelines and heuristics, user-centred design, usability engineering, user experience and evaluation techniques, and will include a series of mini design exercises and design-implementation projects. It will feature an invited guest professor from MIT, Prof. Laurence Young, the Apollo Program Professor of Astronautics, for 2 weeks to guide the course in Ergonomics and in-spaceship usability. Students who successfully complete the course will be well-equipped with the concepts and language to argue and discuss how well a system's front-end (e.g. a website, a mobile app, a museum kiosk, etc.) is designed and be able to design usable, easy-to-use, intuitive, attractive user-interfaces informed by the concepts and knowledge learned during the course.
Prerequisite
10.009 The Digital World
Learning Objectives
1. Understand the concept of usability, design principles, guidelines, heuristics and other fundamentals of Human-Computer Interaction.
2. Analyse a set of requirements in terms of its user-interface implications.
3. Develop a usage scenario for a given set of user requirements and available technologies.
4. Construct a user-interaction strategy for a given problem.
5. Sketch a series of user-interfaces for a given use scenario.
6. Implement a designed user-interface to demonstrate its functionality and usability.
7. Employ a set of usability engineering methods to refine a designed user-interface.
8. Evaluate a user-interface using suitable evaluation methodology.


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Faculty Search
DESIGNATION
ALL
QUALIFICATION
ALL
RESEARCH INTEREST
Others
Information Security in Cyber Physical Systems
Networking, and Wireless and Sensor Networks
Machine Learning and Artificial Intelligence
NGAI-MAN (MAN) CHEUNG
Assistant Professor
PhD, University of Southern California
COSTAS COURCOUBETIS
Professor
PhD, University of California, Berkeley
SUBHAJIT DATTA
Lecturer
PhD, Florida State University
YU (JASON) GU
Assistant Professor
PhD, University of Minnesota
STANLEY KOK
Assistant Professor
PhD, University of Washington
OKA KURNIAWAN
Lecturer
PhD, Nanyang Technological University
HYOWON LEE
Assistant Professor
PhD, Dublin City University
LU WEI
Assistant Professor
PhD, National University of Singapore
SIMON LUI
Assistant Professor
PhD, The Hong Kong University of Science and Technology
ADITYA P MATHUR
Head of Pillar and Professor
PhD, Birla Institute of Technology and Science, Pilani, India
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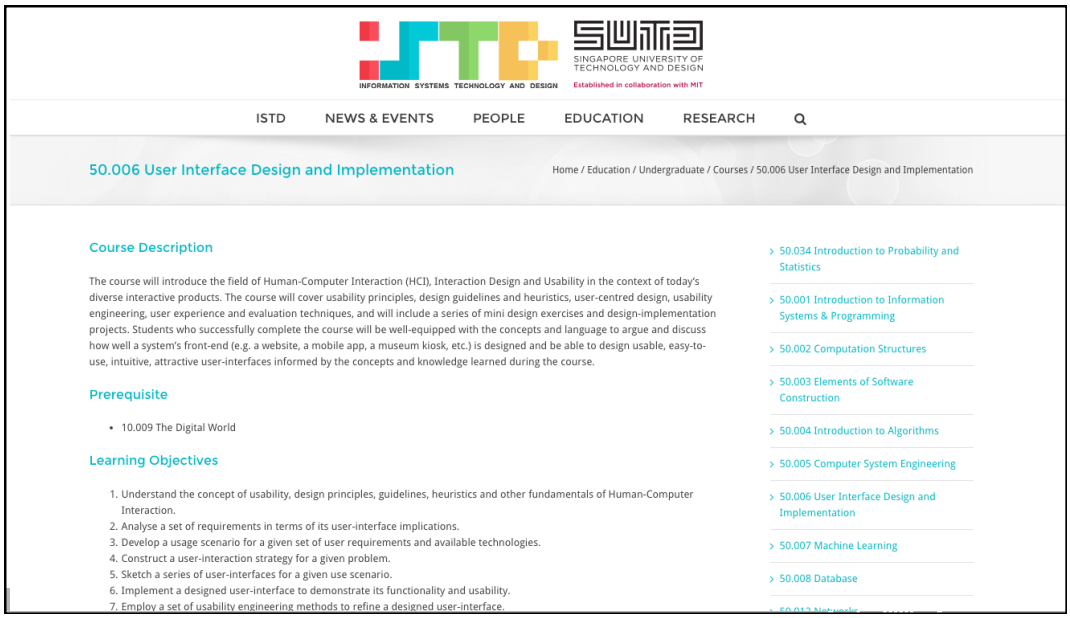
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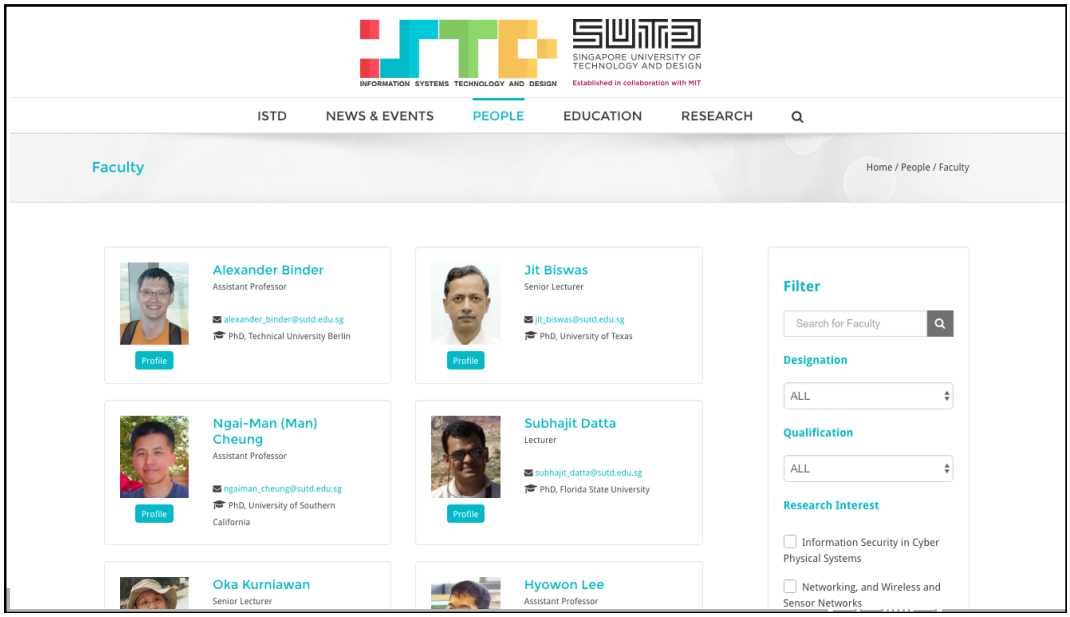
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Designers can simply follow what empirical study results show

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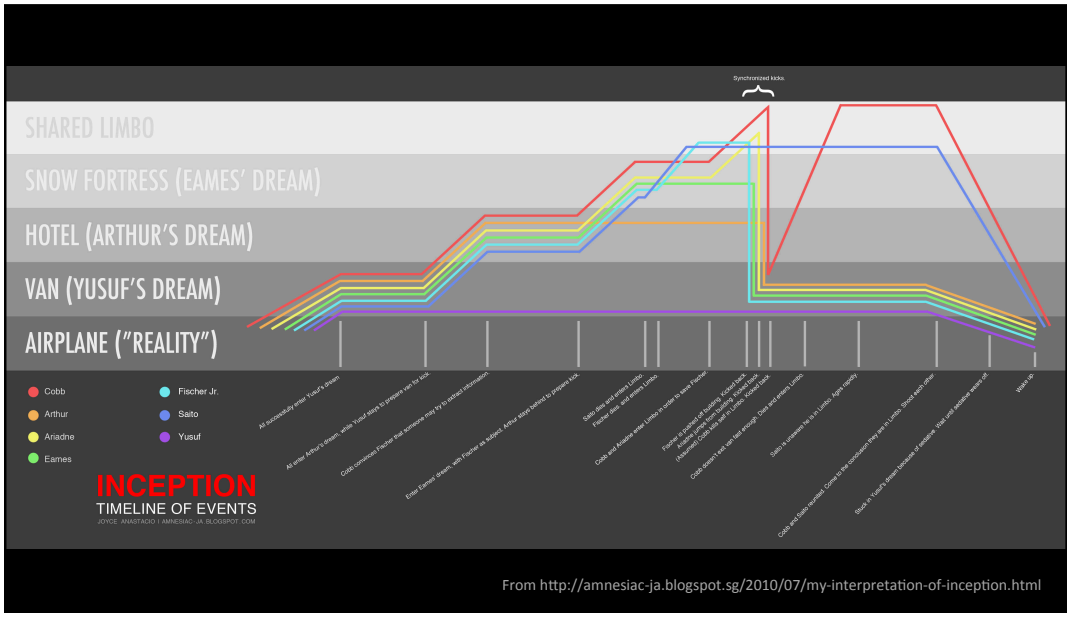
Designers can simply follow what empirical study results show

Be careful on the contrast difference between foreground and background…

White text
Yellow text
Red text
Blue text
Purple text
Green text

White text
Yellow text
Red text
Blue text
Purple text
Green text



From http://amnesiac-ja.blogspot.sg/2010/07/my-interpretation-of-inception.html

General Guidelines

Common sense, research findings, designer's experience, other disciplines... incorporating ***design principles***

Graphic Design

Use quiet background, so that what you want to **emphasise** can be emphasised


Book of
THE DAILY
ROCKMUSICFES
RADIOHEAD. DEPECHE
THE CHEMICAL BROTHERS. THE PRODIGY.
KAISER CHIEFS. WHITE LIES. THE KOOKS.
LIVE
DESIGN
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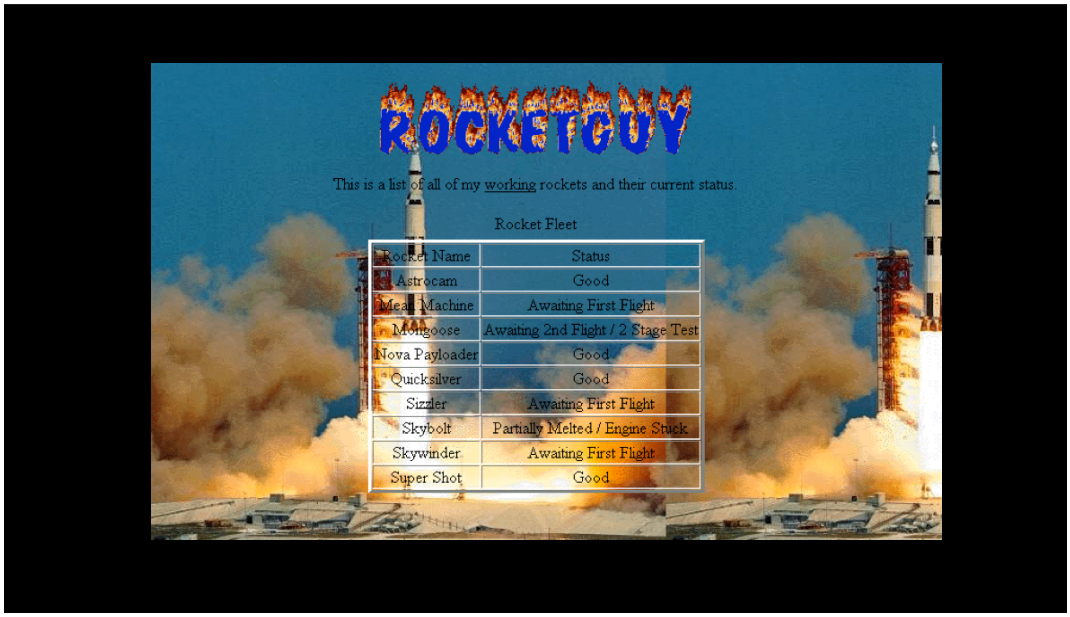
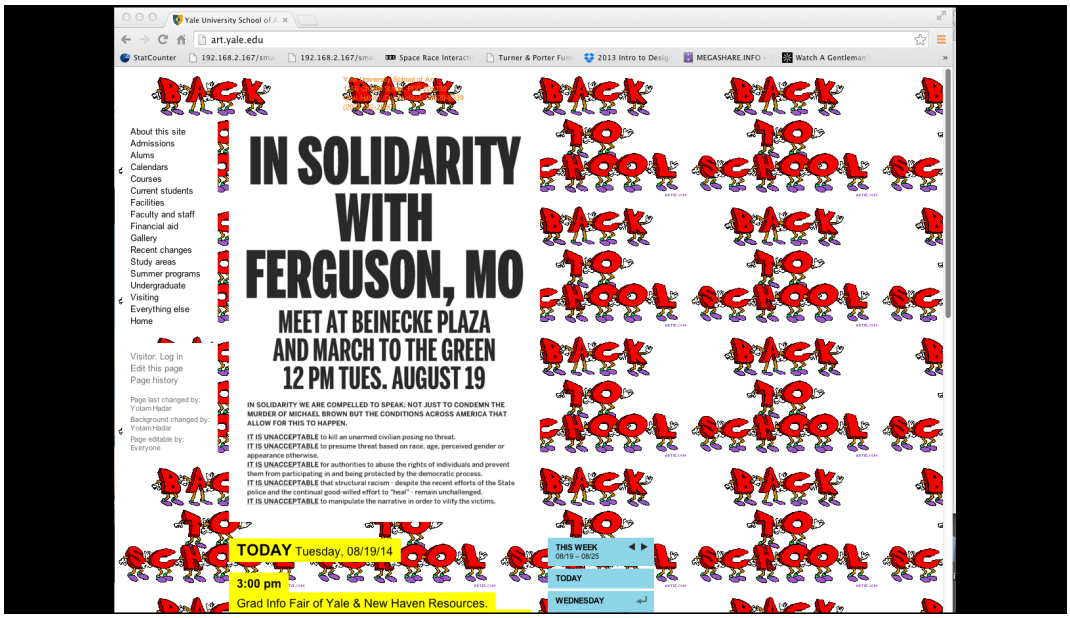
TOKYO DESIGN ACADEMY
www.yoursite.com
2010.07.10 starting@9am
¥2500


ROCKETCUY
This is a list of all of my working rockets and their current status.
Rocket Fleet
Rocket Name
Status
Astrocam
Good
Meat Machine
Awaiting First Flight
Mongoose
Awaiting 2nd Flight / 2 Stage Test
Nova Payloader
Good
Quicksilver
Good
Sizzler
Awaiting First Flight
Skybolt
Partially Melted / Engine Stuck
Skywinder
Awaiting First Flight
Super Shot
Good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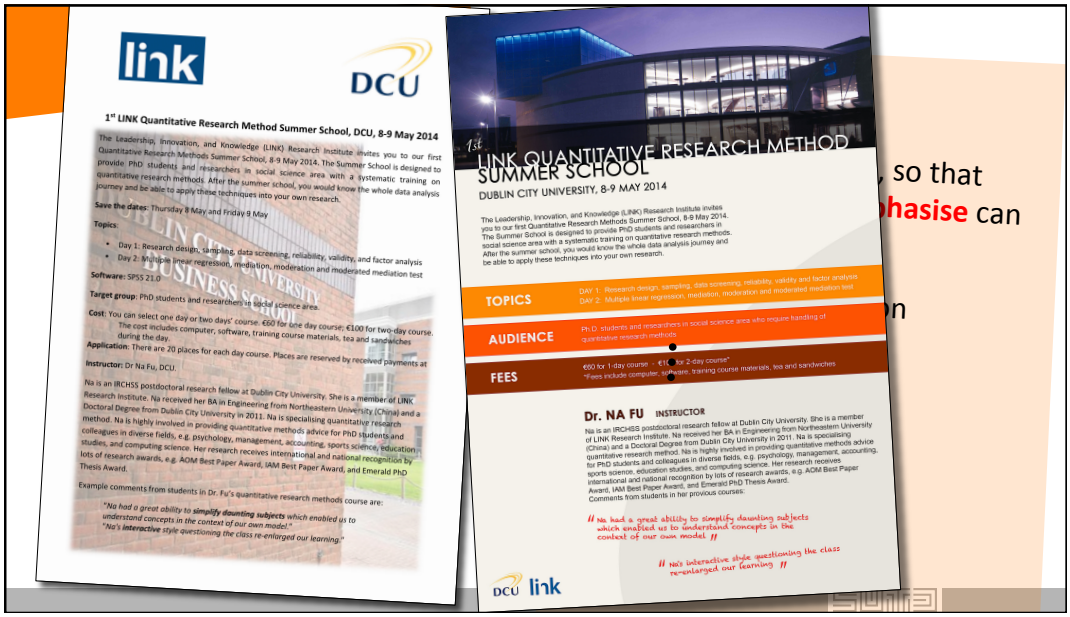
IN SOLIDARITY WITH FERGUSON, MO
MEET AT BEINECKE PLAZA
AND MARCH TO THE GREEN
12 PM TUES. AUGUST 19
IN SOLIDARITY WE ARE COMPELLED TO SPEAK: NOT JUST TO CONDEMN THE MURDER OF MICHAEL BROWN BUT THE CONDITIONS ACROSS AMERICA THAT ALLOW FOR THIS TO HAPPEN.
IT IS UNACCEPTABLE to kill an unarmed civilian posing no threat.
IT IS UNACCEPTABLE to presume threat based on race, age, perceived gender or appearance otherwise.
IT IS UNACCEPTABLE for authorities to abuse the rights of individuals and prevent them from participating in and being protected by the democratic process.
IT IS UNACCEPTABLE that structural racism - despite the recent efforts of the State police and the continual good-willed effort to "heal" - remain unchallenged.
IT IS UNACCEPTABLE to manipulate the narrative in order to vilify the victims.
TODAY Tuesday, 08/19/14
3:00 pm
Grad Info Fair of Yale & New Haven Resources.
THIS WEEK
08/19 – 08/25
TODAY
WEDNESDAY


link
DCU
1st LINK Quantitative Research Method Summer School, DCU, 8-9 May 2014
LINK QUANTITATIVE RESEARCH METHOD SUMMER SCHOOL
DUBLIN CITY UNIVERSITY, 8-9 MAY 2014
TOPICS
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General Guidelines

Common sense, research findings, designer's experience, other disciplines… incorporating ***design principles***

Graphic Design

Use quiet background, so that what you want to **emphasise** can be emphasised

Sharpen the information

⋮

➡ Applying design guidelines/principles will make a huge difference on your UI !

General Guidelines

- Embedded design principles
- 40%+ of UI design textbooks
- 'Usability Principles', 'Heuristics', 'Design Rules', 'Design Guidelines'…

End of Slides

➡ We will deal with these for next 3 weeks