User Interface Design and Development
(Introduction to Human Computer Interaction)

Nan Tu PhD

Agenda

- Welcome
- Syllabus, **Grading**, Assignment, Exam, etc
- Introduction to Human Computer Introduction (HCI)
- Triumph of the Nerds Video

Instructor: Nan Tu PhD

BS. Xi'an Jiaotong University, China

Manufacturing Engineer, 1990 – 1993 Yunnan, China

Adv. Manufacturing Engineer, 1996 – 1998 Seagate Technology, Inc. USA

Research Assistant, 1998 – 2001 University of Minnesota

MS, PhD, University of Minnesota, USA 1996/2002

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Various startup activities

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Class Rules

- Attendance (you are **expected** in each class)
- Participation (I **encourage** class discussion)
- Cell phone:- **turn off or use vibration**
- Ethics (you are expect to produce your **own** work)
- **Electronic** version home work (no paper, no late assignment accepted, no exceptions)

Course Syllabus

Who, when, where

Schedule

Grading

    Individual assignments: 30%

    Project:

    Many milestones. Must be done on time. Milestone reports are read but not graded, will receive comments / feedback instead.

    Final report and deliverable gets a grade at the end – 50% of the total score,

    project demonstration and presentation 20%

Refer to the handout

Teaching Methods

- Lecture with a lot of class discussion (since it is a very small class, I intent to make is very interactive)
- Project Assignment (you will work on the project under my direct supervision)
- Paper Reading (I will assign you reading materials)
- Guest Lecturers (from Industry)

Text Book and References

- Text Book:
  - Jakob Nielsen's 可用性工程
- Strongly Recommended:
  - http://www.uidesign.net
  - http://www.useit.com/
  - http://www.baddesigns.com/
- There are many other wonderful books and websites (stay away from Chinese websites which have very bad usability)

Course Schedule (Tentative)

- Intro to Human Computer Interaction
- UI Design Cycle, User-Centered Design
- Goals, Personas, Task Analysis, Scenarios
- Prototyping
- Design Techniques
- Usability Engineering Methods
- Discount Usability Engineering
- Heuristic Evaluation
- Cognitive Issues and Human Abilities
- Formal Usability Testing
- Advanced Topics:
  - For Practitioners: The Recent Development in Web Technology and Its Opportunities
  - For Researchers: The Advanced Research Topics in Human Computer Interactions

Project Schedule (Tentative)

- Project proposals (3rd week)
- Project personas and goals (4th week)
- Scenarios, tasks, and initial sketches (5th week)
- Lo-Fi prototype and test (8th week)
- First interactive prototype (10th week)
- Class presentation and discussion (10th week)
- Project heuristic evaluation (11th week)
- Second interactive prototype (13th week)
- Usability testing (14th week)
- Class presentation (15th week)
- Third prototype and project writeup (Final week)

- Note: This is a tentative schedule. There will also be individual assignments
  Dates shown are the week the item is due

Human Computer Interaction Definition

- Human-computer interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.

Disciplines Related to HCI

- Computer Science (application design and engineering of human interfaces)
- Psychology (the application of theories of cognitive processes)
- Sociology and anthropology (interactions between technology, work, and organization)
- Industrial design (interactive products)
- Industrial engineering (human factors ergonomics, and design of experiments)

Historical Roots

- 1963 MIT student: Sutherland Ph.D. thesis Sketchpad (the origin of computer graphics)
- Building blocks of human computer interactions include the mouse, bitmapped display, personal computers, windows, the desktop metaphor, the point-and-click editors

Future Development Forces

- Miniaturization of hardware leading to portability. (e.g. PDA)

- Assimilation of computation into the environment (e.g., Windows Media Center, Xbox).

- Specialized hardware leading to new functions (e.g., rapid text search).

- Increased development of network communication and distributed computing (web as a platform).

- Increasingly widespread use of computers, especially by people who are outside of the computing profession (social networking and participation).

- Increasing innovation in input techniques (e.g., voice, gesture, pen), combined with lowering cost, leading to rapid computerization by people previously left out of the "computer revolution."

- Wider social concerns leading to improved access to computers by currently disadvantaged groups (e.g., young children, the physically/visually disabled, etc.).

Future HCI Characteristics

- Ubiquitous communication.
- High functionality systems.
- Mass availability of computer graphics.
- Mixed media.
- High-bandwidth interaction.
- Large and thin displays.
- Embedded computation.
- Group interfaces.
- Information Utilities.

The Building Blocks of Human Computer Interaction
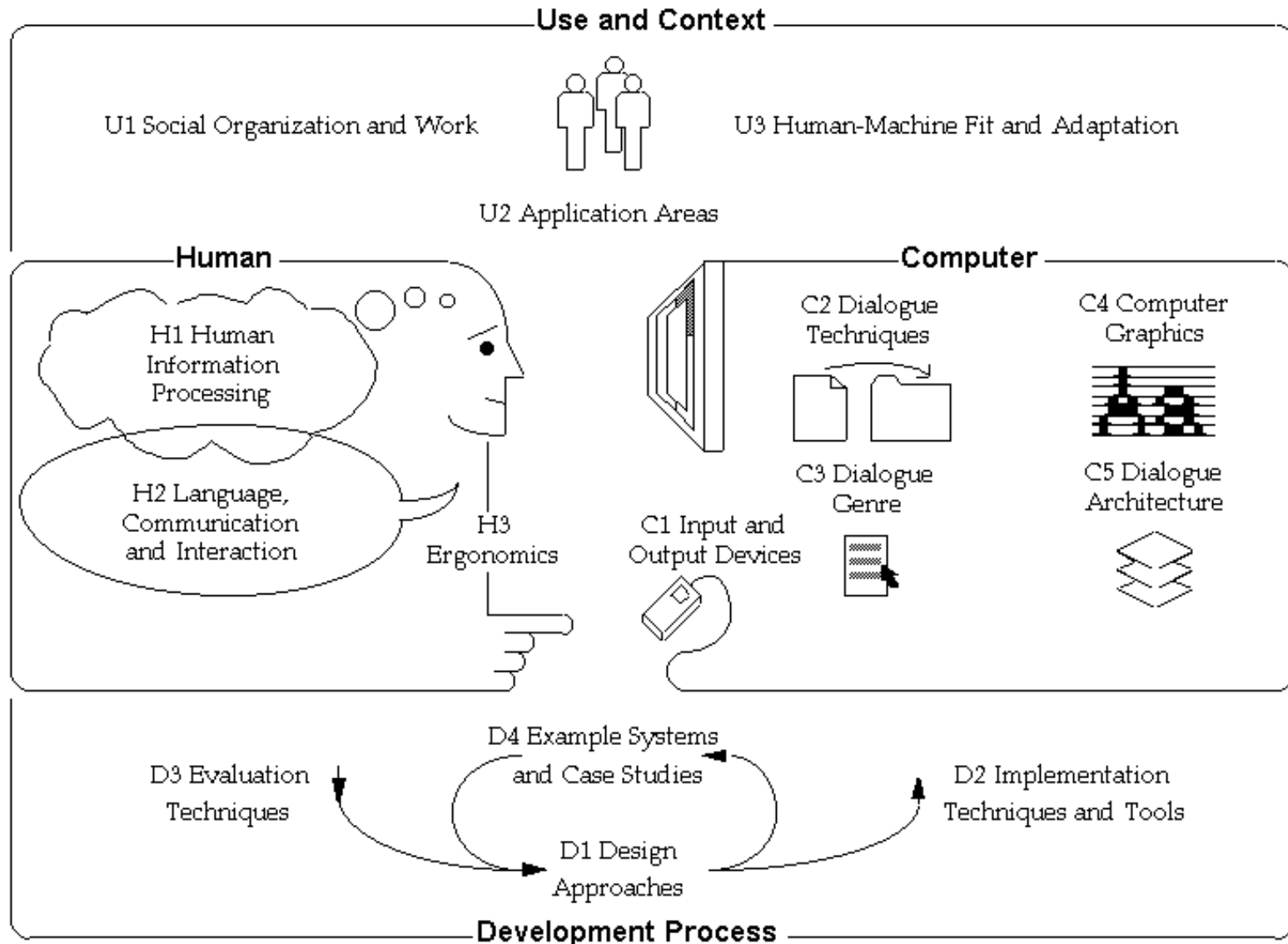
Class Discussion: Who is Familiar with the following terms

- adsense ajax bittorent blog craigslist doubleclick ebay firefox flash flickr google gui html hypertext java linux messenger mp3 napster opensource pageviews perl podcast qq rss skype tag voip wiki wireframe wysisyg

- Rank your familiarity from 1 to 10
- Format the text by familiarity scale
  - ie familiarity rank for adsense is 3, format the text adsense as front size 3, 6, 9 or 12, etc

My Result

Rate From 1 to 10

adsense	3	messenger	8
ajax	1	mp3	9
bittorent	9	napster	5
blog	9	opensource	9
craigslist	5	pageviews	8
doubleclick	8	perl	1
ebay	9	podcast	5
firefox	8	qq	5
flash	5	rss	2
flickr	9	skype	6
google	7	tag	6
gui	7	voip	8
html	7	wiki	6
hypertext	8	wireframe	4
java	6	wysisyg	8
linux	7		

Results

- adsense ajax bittorent blog craigslist doubleclick ebay firefox flash flickr google gui html hypertext java linux messenger mp3 napster opensource pageviews perl podcast qq rss skype tag voip wiki wireframe wysisyg

Moral Boosting Video

Triumph of the Nerds