CPSC 481

Foundations and Principles
of
Human Computer Interaction

James Tam

CPSC 481 Administrative

James Tam
- Human computer interaction
- Computer supported cooperative work
- Change awareness
- Games
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Office hours
- Monday and Wednesday (12:00 – 12:50)
- By email any time
- By appointment: email or phone to arrange one
- Drop in for urgent requests (but no guarantees!)

Feedback

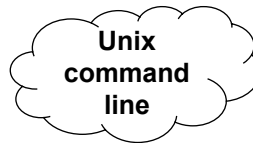**???**

Dilbert © United Features Syndicate

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Why An Interface Design Process?

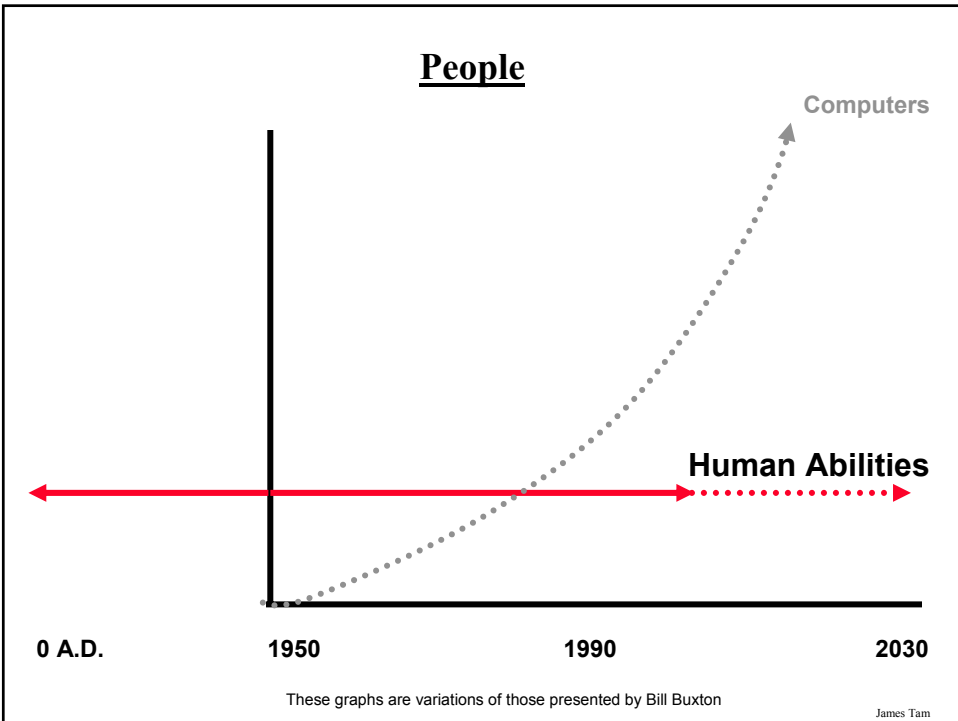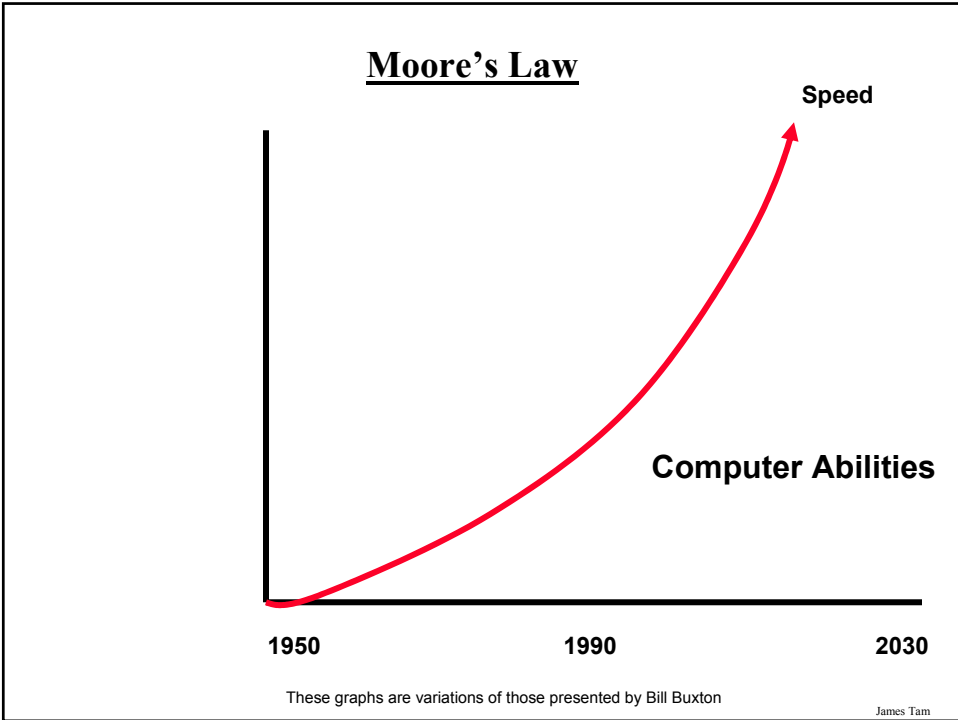**63% of large software projects go over cost**
- Managers gave four usability-related reasons
  - Users requested changes
  - Overlooked tasks
  - Users did not understand their own requirements
  - Insufficient user-developer communication and understanding

Usability engineering
- Pay a little now, or pay a lot later!
- Far too easy to jump into detailed design that is:
  - Founded on incorrect requirements
  - Has inappropriate dialogue flow
  - Is not easily used
  - Is never tested until it is too late

Unix command line

Windows GUI

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Moore's Law

Speed

Computer Abilities

1950   1990   2030

These graphs are variations of those presented by Bill Buxton

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People

Computers

Human Abilities

0 A.D.   1950   1990   2030

These graphs are variations of those presented by Bill Buxton

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HCI Deals With The Interaction Of A Person And A Computer

Technological perspective

Human perspective

Technological Perspective

Technical constraints

• A reality check does occur but "reality bats last"[1]

• Beyond the mouse the and keyboard?

Human Perspective

How people process information

•Memory, perception, motor skills, attention etc.
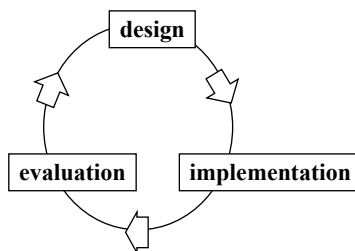
Language, communication and interaction

Ergonomics

Human Computer Interaction

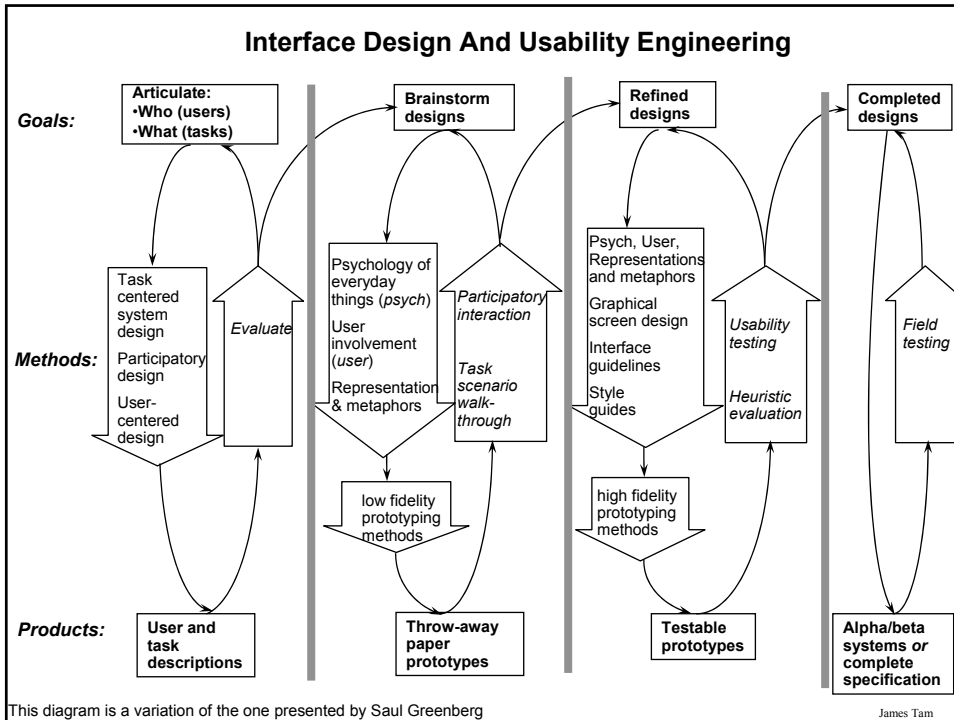**A discipline concerned with the**

   design,
   implementation and
   evaluation

…of interactive computing systems for human use

```
        design
      /        \
evaluation   implementation
      \        /
```

Interface Design And Usability Engineering

Goals:

| Articulate:
•Who (users)
•What (tasks) | | Brainstorm
designs | | Refined
designs | | Completed
designs |

Methods:

Task centered system design

Participatory design

User-centered design

Evaluate

Psychology of everyday things (*psych*)

User involvement (*user*)

Representation & metaphors

Participatory interaction

Task scenario walk-through

low fidelity prototyping methods

Psych, User, Representations and metaphors

Graphical screen design

Interface guidelines

Style guides

Usability testing

Heuristic evaluation

high fidelity prototyping methods

Field testing

Products:

| User and task descriptions | | Throw-away paper prototypes | | Testable prototypes | | Alpha/beta systems *or* complete specification |

This diagram is a variation of the one presented by Saul Greenberg

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HCI.. Not Just Clicky, Clicky

Objectives

At the end of this course, you will

- Know what is meant by good design (guidelines and models that can be applied to interface design)

- Know and have applied a variety of methods for involving the user in the design process

- Have experienced building applications through various methods and systems

- Know and have applied methods to evaluate interface quality

- Have sufficient background to
  - Apply your training in industry
  - Continue your education

What 481 Is Not About

The theory and mechanics of GUI programming

How to programming with a GUI language e.g., Visual Basic
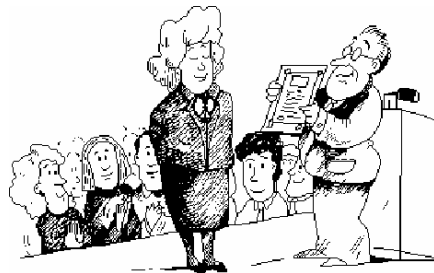
How You Will Be Evaluated

1) Assignments (50%)
- Portfolio:
  - Assignment 1 (TA): Task centered design and prototyping (13%)
  - Assignment 3 (Me): System redesign, implementation, and evaluation (25%)
- Usability study:
  - Assignment 2 (TA): Usability evaluation of a large system in everyday use (12%)

2) Exams (50%)
- Mid-term (20%)
- Final (30%)

Note: you must pass the exam component and the assignment components to pass the course

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Group Work

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Labs

Critical to your success in assignments
- Elaboration of assignment specifications
- Discuss intermediate results
- Feedback on graded assignments
- Learn specific skills

Textbooks And Additional References

Lecture notes (required)
- Sold at cost by the Copy Center
- Also available on the web
  (http://www.cpsc.ucalgary.ca/~tamj/481/)

Text books (optional)
- Interaction Design: Beyond Human-Computer Interaction by Sharp, Preece and Rogers.
- Readings in Human Computer Interaction: Towards the Year 2000 (2nd Edition) by Baecker, Grudin, Buxton and Greenberg
- You can also choose whatever programming manual that you like best

Extra readings
- Some will be required, some are optional