

# Human Computer Interaction SE 350

## Part 1 – Principles of Human Computer Interaction

Lecture 1 - Introduction

SE 450

1

## HCI is about

- making computers
  - More useful
  - More usable
  - More entertaining
- expanding the interaction space
  - More natural input - voice, pens, gestures
  - More natural output – voice/sound, scent, visualizations

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2

## People

- Lecturers
  - Dr Beryl Plimmer (coordinator)
    - Room 303.483
    - Email [beryl@cs.auckland.ac.nz](mailto:beryl@cs.auckland.ac.nz)
  - Christof Lutteroth
    - Room 303.485
    - Email [lutteroth@cs.auckland.ac.nz](mailto:lutteroth@cs.auckland.ac.nz)
- Tutor
  - tba

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3

## Who Am I?

- Beryl Plimmer
  - Senior Lecturer CS
  - >30 years industry & academia
  - Mother, wife, swimmer ....
- Research Interests
  - Pen-based computing
  - Sketch tools
  - Annotation tools



InkKit

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4

## Resources

- Text book
  - Human Computer Interact (3<sup>rd</sup> Edition)  
Dix, Finlay, Abowd & Beale (approx \$100)
- Reference book
  - User Interface Design: A Software Engineering Perspective  
Lauesen  
<http://www.itu.dk/~slauesen/SorenUID.html>
- Class Web Site  
<http://www.se.auckland.ac.nz/se350s1c/>

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5

## Part 1 Plan

Week	Day	Date	Lecture	Topic	Lab	Assessment						
1	Mon	3-Mar	L1				5	Mon	7-Apr	L12	Paradigms	
	Tue	4-Mar	L2	Usability Gen				Tue	8-Apr	L13	Paper Prototypes	
	Wed	5-Mar						Wed	9-Apr			
	Thu	6-Mar				Heuristic Evaluation Online Shopping		Thu	10-Apr	L14	Design Rules	
	Fri	7-Mar	L3	Usability Heuristic				Fri	11-Apr	L15	Design 1	
											Lo-Fi Prototype	
2	Mon	10-Mar	L4	Usability Tests				Break				
	Tue	11-Mar	L5	Usability Tools and Research				Monday	14-Apr	Break		
	Wed	12-Mar						Tuesday	15-Apr	Break		
	Thu	13-Mar				Fitts Law		Wednesday	16-Apr	Break		
3	Fri	14-Mar	L6	Human 1				Thursday	17-Apr	Break		
	Mon	17-Mar	L7	Human 2			Assignment 1 due	Friday	18-Apr	Break		
	Tue	18-Mar	L8	Human 3								
	Wed	19-Mar				Augmented Reality						
3	Thu	20-Mar						6	Mon	21-Apr	L16	Design 2
	Fri	21-Mar	Easter					Tue	22-Apr		Revision	
	Mon	24-Mar	Easter					Wed	23-Apr			
	Tue	25-Mar	Easter					Thu	24-Apr	Test	Test	
4	Wed	26-Mar				Morae		Fri	25-Apr	Anzac Day	No Lab	
	Thu	27-Mar	assign 1									
	Fri	28-Mar										
	Mon	31-Mar	L9	HCI in the software Process								
4	Tue	1-Apr	L10	The computer				7	Mon	28-Apr		
	Wed	2-Apr									Low Fi Prototype due	
	Thu	3-Apr				Screen Reader Simulation						
	Fri	4-Apr	L11	The Interaction								

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6

## Assessment 1 of 2

### Assessment

Assignments – all 5%

1. Heuristic evaluation 17<sup>th</sup> march
2. Low-fidelity prototype 28<sup>th</sup> April
3. Implementation 15<sup>th</sup> May
4. Usability Evaluation 4<sup>th</sup> June

Test – 10% each

1. 24<sup>th</sup> April in lecture time
2. 30 May in lecture time

Exam 60%

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7

## Assessment 2 of 2

- If you miss the test or exam you **must** apply for an aegrotat through the exam office
- Anything to do with assignments, talk to the lecturer who has set the assignment
- Grades held on Cecil  
<https://cecil.auckland.ac.nz/>

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8

## Regulations & Guidelines

- There are many avenues to get extra help
  - Lecturers and tutors have office hours
  - Class Forum
- Reminder – copying work is cheating
  - University policy  
*'The University of Auckland will not tolerate cheating, or assisting others to cheat, and views cheating in coursework as a serious academic offence. The work that a student submits for grading must be the student's own work, reflecting his or her learning. Where work from other sources is used, it must be properly acknowledged and referenced. This requirement also applies to sources on the world-wide web. A student's assessed work may be reviewed against electronic source material using computerized detection mechanisms. Upon reasonable request, students may be required to provide an electronic version of their work for computerized review.'*
  - Department policy <http://www.cs.auckland.ac.nz/CheatingPolicy.html>

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9

## Labs

- Attendance at labs is expected!
- Sometimes you will have specific tasks to perform
- Sometimes we will teach you something
- Sometimes your group will be able to meet and work on your assignments

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10

## Introduction to HCI

- What is HCI?
  - Human aspects
  - Technology aspects
  - Design
  - Design support
  - Evaluation

How much of the code in an interactive program is devoted to HCI?

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11

## What is HCI?

- Main elements of HCI are:
  - People
  - Computers
  - Interaction
  - Activities
  - Environment
- People don't use computers because they want to use computers – they do so to perform some task or activity, to achieve a particular goal.
  - Except .....

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12

## Why is HCI Important?

- **Business view**
  - Get the most out of your work units
- **Marketplace view**
  - There is a choice of systems
  - Expectation of ease-of-use
- **System view**
  - Complex interface between computers and humans
- **Human factors view**
  - Limitations to what humans can do (morale, time money, life)
- **Social view**

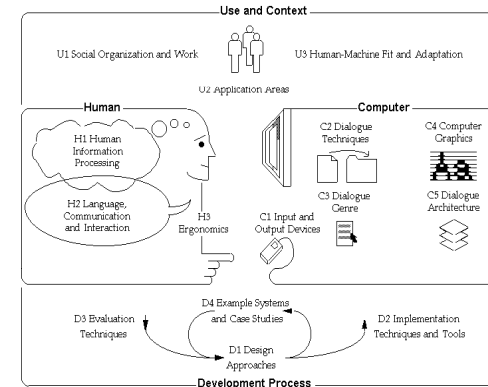
How can you create effective software if you don't understand how users work?

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13

## SIGCHI Description of HCI

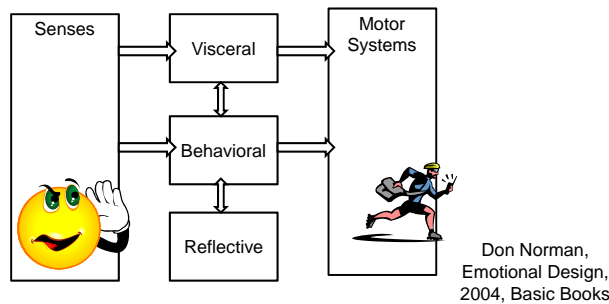


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14

## How People Interact with Objects



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15

## Response Levels 1 & 2

- **Visceral**
  - is fast, it makes instant judgements about what is good and bad, safe or dangerous. It sends messages to our muscles to react appropriately. Lower level animals operate mostly in this way.
- **Behavioural**
  - kicks in next. This is where we operate most of the time. Most of the actions become automated, or semi automated. For example, I do not have to consciously think about where the keys are on the keyboard, I just know an tap out the word. Also, for most words, I don't have to think about how to spell them. There are standard sounds and combinations of letters. Unusual combinations trip us up. Different keyboard configurations really annoy!

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16

## Response Levels

- Visceral and behavioural
  - take input directly from the senses and send signals directly to the motor system. There is interplay between the layers.
- Reflective the highest level
  - watches over the lower levels. It is thought that it does not take input directly from the senses or send information to the motor system. It is creative, dreaming, reflective pleasure

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17

## Application to design

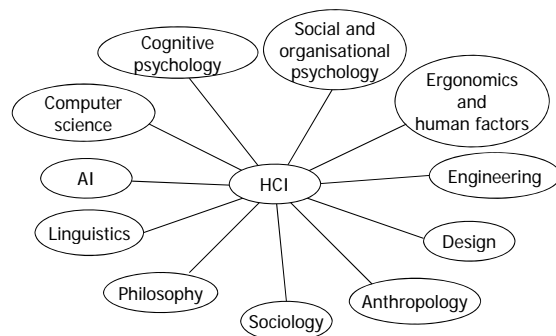
- Visceral design
  - what is our initial reaction when we look at a fantastic car, sensual picture, cute kitten. If an object doesn't pass the visceral test we are unlikely to persist with it.
- Behaviour design
  - is all about performance: function, understandability, usability and physical feel.
- Reflective design
  - is about ongoing pleasure or how an object makes us feel about ourselves. How many of us have a cell phone with a zillion cool features that we mostly used in the first week to show them off to our friends?

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18

## Interdisciplinary Domain



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19

## Interdisciplinary Domain

- Cognitive psychology
  - Understanding human behaviour and the mental processes that underlie it. Developed the notion of information processing.
- Social and organisational psychology
  - The nature and causes of human behaviour in a social context.
- Ergonomics or human factors
  - Define and design tools and various artefacts for different work, leisure and domestic environments to suit the capacities and capabilities of users.
- Linguistics
  - Scientific study of language, and then application to computing environments such as natural language interfaces.

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20

## Interdisciplinary Domain

- Artificial Intelligence
  - Design of 'intelligent' computer programs, applied for example to tutoring or intelligent user interfaces.
- Philosophy, sociology and ethnography
  - Investigating the consequences of developments in IT and technology transfer.
- Engineering and design
  - An applied science looking at model building and empirical testing.

## Learning Goals

- Appreciation of the importance of HCI
- Understand the factors which impact on good HCI
- Able to make design decisions which improve interaction
- Ability to evaluate the usability of software
- Knowledge of standards and frameworks that can be used for HCI design and implementation