

International Islamic University
Human-Computer Interaction

Lecture 1&2

Introduction to Human-Computer Interaction

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Computers are Everywhere

- Computer invasion has started
- Traditional notion of computers
- Computers are everywhere
- Computers will annoy, infuriate, and even kill

Riddles for the Information Age

- Computer + Alarm Clock
- Computer + Camera
- Computer + Car
- Computer + Warship
- Computer + Airplane

HCI – A Formal 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”

-ACM/IEEE

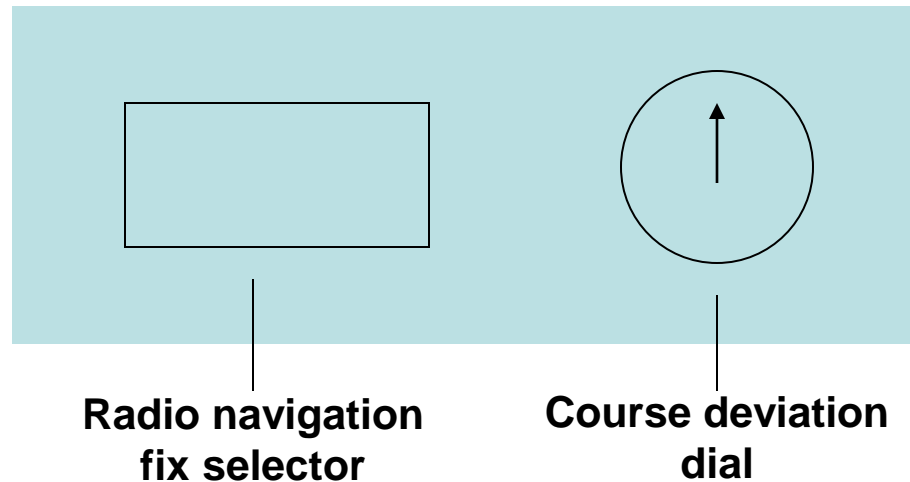
In Today's Lecture ...

- Significance of HCI
 - Adverse impact of computer technology on humans and reasons for these adverse effects
- Nature of humans and computers
- Paradox of the computing phenomena
- Difference between focus of SE and HCI

Computer + Airplane

- NTSB investigates: 'human error'
- Pilot selected the wrong radio navigation fix

**Airplane
Navigation
Computer
(front panel)**



Computer + Airplane

- Course deviation indicator needle is centered when plane is on course
- No indication of wrong fix selection
- Before and after scenario
- Not the pilots fault:
 - Computer told pilot he was tracking precisely to the beacon he had selected

Joke (from computer industry)

- Man in small airplane
- Lost in clouds
- Asks directions from man in building
 - ‘you are in plane 100ft above ground’
- Man in plane knew it was software engineer from Microsoft
- Answer was correct and factual, but no help whatsoever

Fundamental Truths about Computers

- Computers are ubiquitous
 - Everything we use is equipped with computer technology
- and so is their characteristically poor way of communicating and behaving
 - As we saw in plane example

Fundamental Truths about Computers

- Communication was precise and exacting while still being tragically wrong
- Course Deviation Indicator could have told they pilot that Romeo was the wrong fix but it choose not too
- Computers are unconcerned only cared about its internal working

Fundamental Truths about Computers

1. They tell but do not inform.
2. They may guide us with precision but they do not guide us where we want to go.

So who is to be blamed?

- Can we Say “Human Error on part of the pilot” Or can we blame the computer for it?

Fundamental Truths about Computers

- Computers are invading every aspect of modern life, but their communication is poor

Cost of Features

- Every digital device has more features than its manual counterpart

BMW 7 Series with iDrive



Sheer
Driving Pleasure

The ultimate driving machine

BMW 7 Series with iDrive

- L745i
- All Electronic Controls In one Knob
- climate, entertainment, navigation, car information etc
- Takes 15 mins to change a Radio Channel
- the **fundamental flaw**: you absolutely have to take your eyes off the road to change settings,
- Result, Constant Calls to Help Desk



Feature Shock

- Every digital device has more features than its manual counterpart
- But manual devices easier to use
 - Flexibility
 - Subtlety
 - Awareness
- Hi-tech companies add more feature to improve product
 - Product becomes complicated
- Bad process can't improve product

Reality Check and Question

- Computers are everywhere
- Is all computer-aided equipment inherently hard to use?
 - More about this later

Humans vs. Computers

Understanding Nature of Computers and Humans

- 2 species: Human vs. Computers

Humans (aka Homo Sapiens)

- Complex
- Intelligent
- Animate
- Free will
- Range of emotions
- Make mistakes

**Most interesting and
fascinating specie
on planet**

Computer Specie

- Dumb
- Unintelligent
- Inanimate
- Only do what they are told to do
- Don't make mistakes

Once Upon a Time

- Humans were responsible for performing tasks in business world
- Including interacting with other human beings
- Example: salesperson

Once Upon a Time

- Salesperson would judge customer
 - Tone
 - Attitude
 - Body language
 - Understand questions
 - Provide relevant answers

Now we're ..

- Expecting computers to mimic human behavior, e.g. e-commerce systems
- Asking a DUMB, INANIMATE object to perform complex tasks that humans used to perform
- And perform with same level of EFFICIENCY, EFFECTIVENESS and ACCURACY as a human

A very CHALLENGING if not IMPOSSIBLE
thing to do

Porsche Customers

- Before and after scenario
- Engine is now run by software built by software engineers

Acceptable levels of quality for software
engineers are **far lower** than are those for
traditional engineering disciplines

Reality Check

- Computers are everywhere
- Is all computer-aided equipment inherently hard to use?
 - No
- Computer-based products are NOT hard to use
 - It's the wrong process
 - It's the competency

What is the Relationship between Software Engineers and Apartheid?

- Apartheid ?
- Nelson Mandela?
- South Africa
 - Regime

What is the Relationship between Software Engineers and Apartheid?

- Apartheid
 - Racial segregation; specifically : a policy of segregation and political and economic discrimination against non-European groups in the Republic of South Africa
- Software Apartheid
 - Institutionalizing obnoxious behavior and obscure interaction of software-based products
- Comparison of Social Activist and Software Engineers
- Institutionalizing apartheid

Paradox ... Why Were Computers Invented?

- Computerized tools hard to use
- Computers were invented to make life easy, convenient and efficient
- Cheaper for manufacturers to control the internal functioning of devices through computers
- Computers make us lose money, annoy us, even kill us! – a paradox

HCI and Software Engineers

- Software engineers focus on internal workings of software
- In HCI we are concerned with external workings of software

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Next Lecture

- Effect of computer systems on human productivity, employee loyalty, customer loyalty and revenue