

# Human-Computer Interaction

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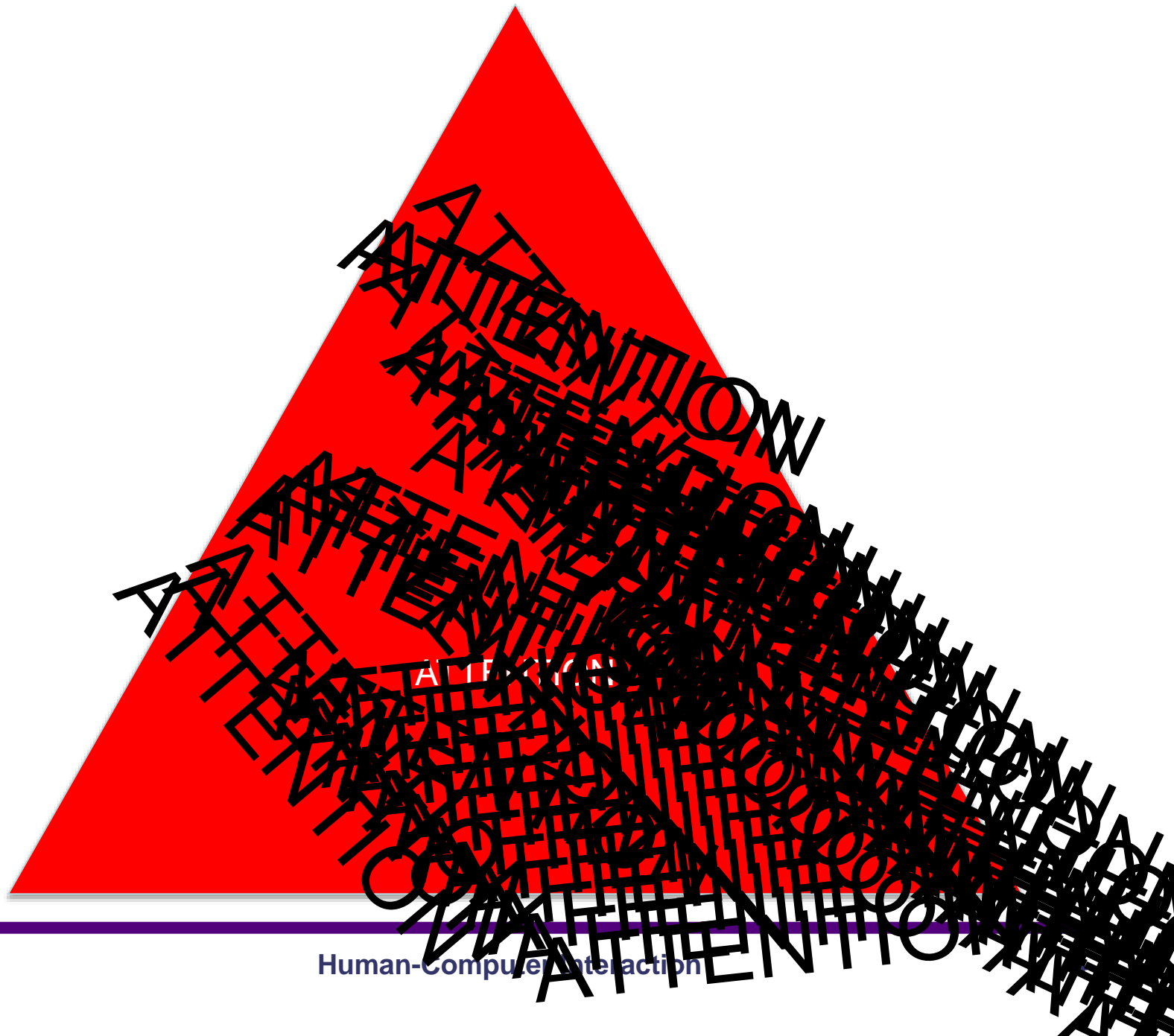
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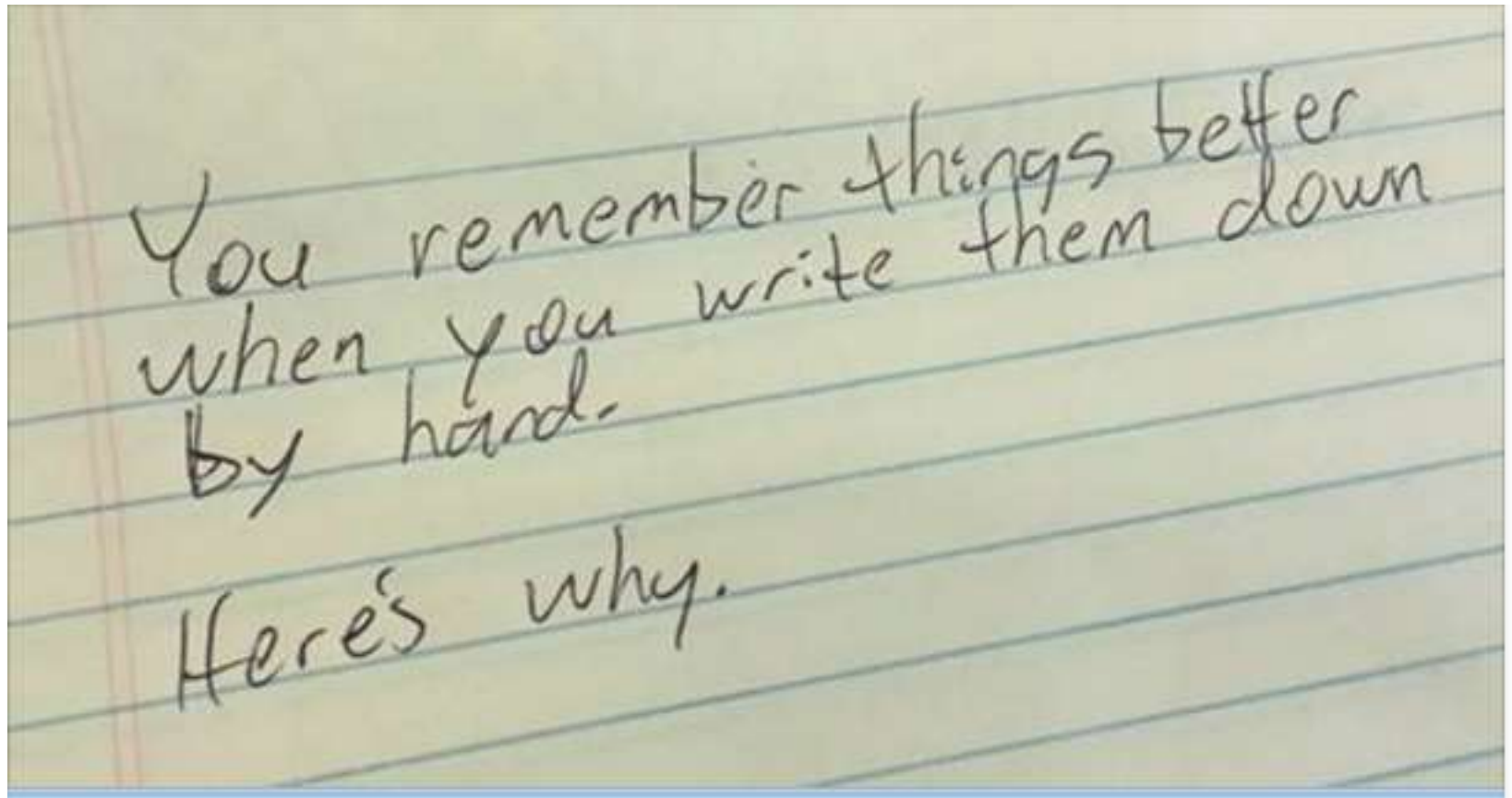
ATTENTION

# What is attention?

- A limited process
  - In size
  - In mechanics
- If we understand the processes of attention we can capture the attention of the user.



Human-Computer Interaction

A photograph of a piece of lined paper with handwritten text in cursive. The text is written in dark ink and is slanted to follow the lines of the paper. The first sentence reads 'You remember things better when you write them down by hand.' and the second sentence reads 'Here's why.'

You remember things better  
when you write them down  
by hand.  
Here's why.

# Why are notes useful?

- **External-storage hypothesis:** people learn by being able to look back at their notes, or even to the notes of other people.
- **Encoding hypothesis:** when a person is taking notes, "the processing that occurs" will improve "learning and retention."

# Why are **hand notes** more useful?

- Typing: people try to take verbatim notes and write down as much of the lecture as they can
- Writing: people are more selective (you can't write as fast as you can type) that extra processing benefit them

# Ground rules



- To maximise learning
  - Avoid **dual-task** (writing e-mails and paying attention to the lecture are incompatible activities).
  - Leave the mobile in your bag
  - Take notes during the lecture and revise them in the evening.
  - If there is something you don't understand, please interrupt me at any time to ask if I could clarify.
  - If you want to make a general remark, please wait until there is a natural break.
  - **Participate!!!!**



# Human-computer interaction

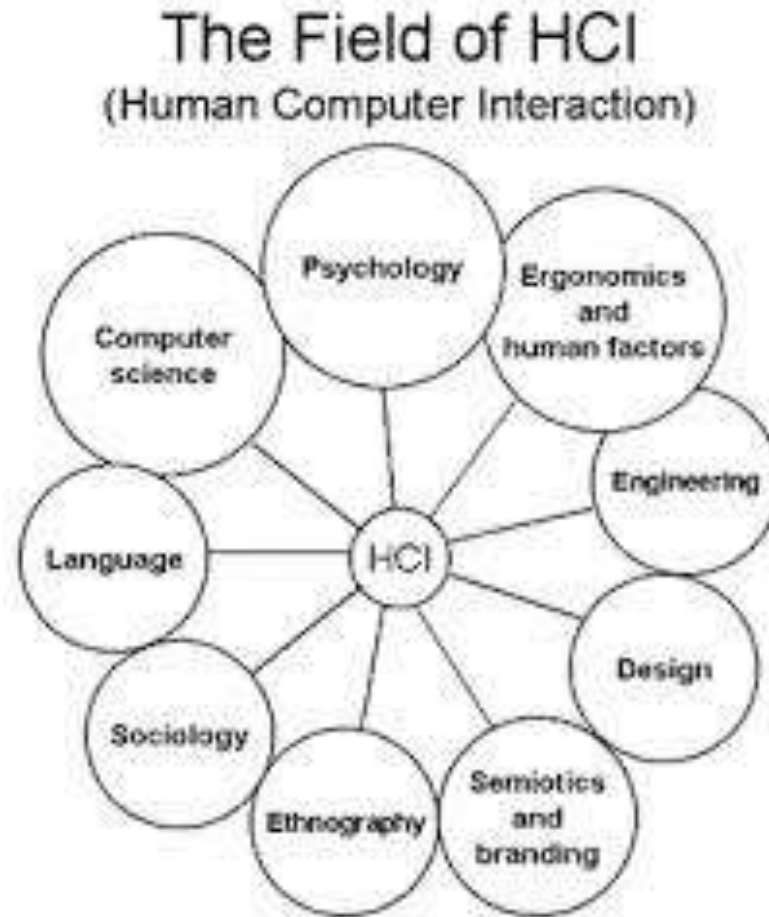
“a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them”

(ACM SIGCHI, 1996, p.5)

# Goals of HCI

- “To develop or improve the safety, utility, effectiveness, efficiency, and usability of systems that include computers”
  - Interacting with computers 1989, p. 3

# Disciplines contributing to HCI



# What knowledge are required?

- “*Psychology and cognitive science* to give her knowledge of the user’s perceptual, cognitive and problem-solving skills; *ergonomics* for the user’s physical capabilities; *sociology* to help her understand the wider context of the interaction; *computer science and engineering* to be able to build the necessary technology; *business* to be able to market it; *graphic design* to produce an effective interface presentation; *technical writing* to produce the manuals, ...” [10]

Dix, A., Finlay, J., Abowd, G. Beale, R. (2004). *Human–Computer Interaction* (3rd edition). Prentice Hall.

# What is an interface?



The space for  
for human communication and  
coordinated action

Winograd (1997)

# Evolution

- **50s** - Interface at the hardware level for engineers - switch panels
- **60-70s** - interface at the programming level - COBOL, FORTRAN
- **70-90s** - Interface at the terminal level - command languages
- **80s** - Interface at the interaction dialogue level - GUIs, multimedia  
(<http://www.cs.cmu.edu/~amulet/papers/uihistory.tr.html>)
- **90s** - Interface at the work setting - networked systems, groupware
- **00s** - Interface becomes pervasive
  - RF tags, Bluetooth, mobile devices, consumer electronics, interactive screens, embedded technology
- **10s** -Interface disappears
  - Focus on tasks, experiences, emotions, social connections, beauty

# Interaction Design

- Creating interactive products to support **people** in their everyday and working life
- Creating **experiences** which fit, extend, and enhance the way people work, communicate and interact
- Increasingly, more application areas, more technologies and more issues to consider when designing ‘interfaces’



# Paradigm change

- Technology-driven design
  - Technology influences the design of the interface which give the user the functionality and interaction mechanisms of the system
- User-centered design
  - User requirements define the functionality of the interface which runs the design of the technology

# Module aims

- Present the techniques and issues involved in HCI to promote usable and engaging interaction design
- Give examples on how to
  - document users needs and goals
  - translate user needs/goals into design
  - evaluate the quality of design alternatives

# Reading List

- CORE READING:

Sharp, H., Rogers, Y., & Preece, J. (2017).  
Interaction Design: beyond human-computer  
interaction. New York: John Wiley & Sons, Inc.  
3<sup>rd</sup>

- Gamberini, L. Chittaro, L. and Paternò, F.  
Human-Computer Interaction, Pearson, 2012.

– NOTE THE HANDOUTS AND LECTURE NOTES DO NOT REPLACE  
THE CORE READING

# On-line resources

- <http://www.sigchi.org/>
  - ACM special interest group
- <http://www.id-book.com/>
  - companion website for Preece et al.'s book
- <http://www.baddesigns.com/>
  - illustrated examples of things that are hard to use because they do not follow human factors principles
- <http://Interaction-design.org>
  - Open source knowledge repository

# Assessment

- Coursework
  - A practical exercise of UCD during the teaching Semester
  - Group project with individual activities and written report
  - Individual analysis
- Attendance required
  - Fixed delivery dates

# Groups

- 4 people each
- Subscription on the course platform
- Active, constant participation required



# Wrapping up

- HCI definition
- Interaction design
- Module presentation
  - Write your reflections (5 minutes)