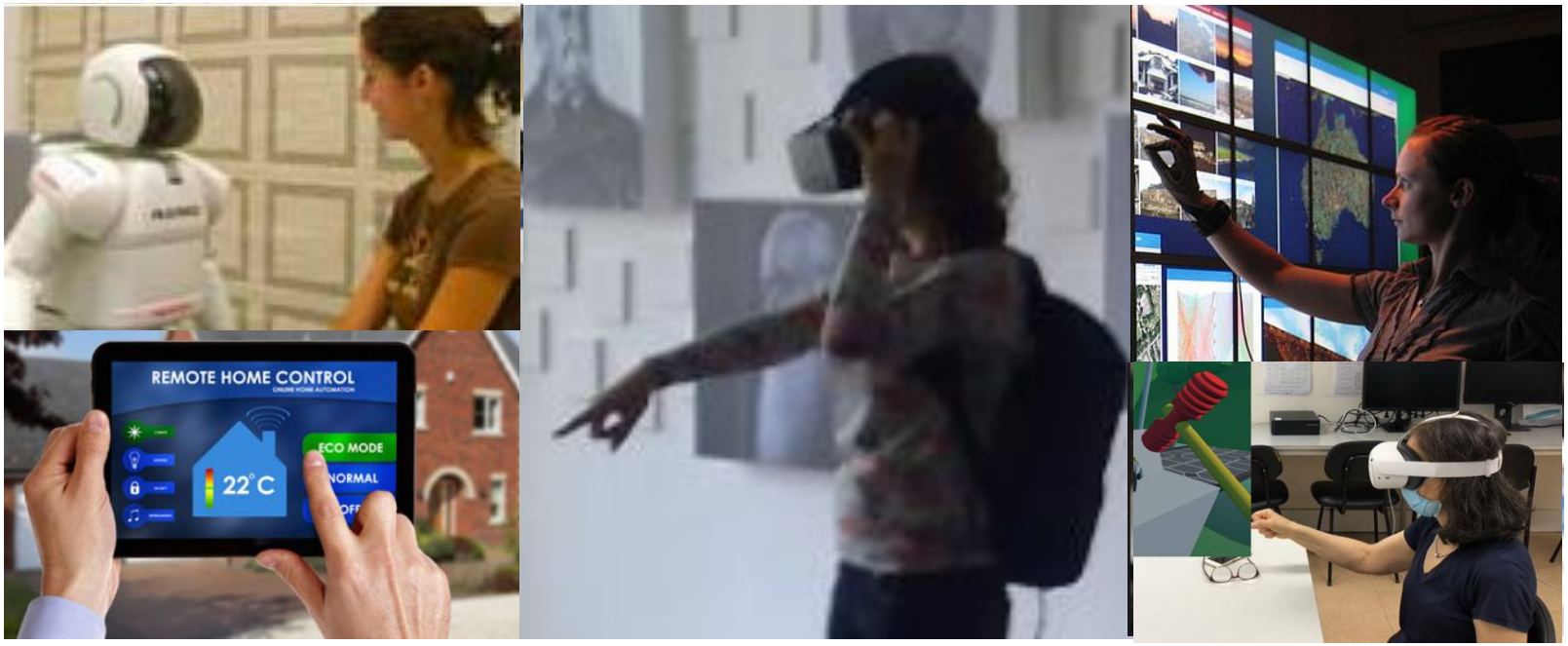
Universidade de Aveiro
Departamento de Electrónica,
Telecomunicações e Informática

Human-Computer Interaction
2022/23



Beatriz Sousa Santos

Outline

- Introduction
- Course Information
- Lectures and lab classes organization
- Lectures and lab classes schedule
- Assessment
- Bibliography
- Selection of a paper to present

“ the HCI discipline investigates and tackles all issues related to the design and implementation of the interface between humans and computers. “

“It expanded from early graphical user interfaces to include myriad interaction techniques and devices, multi-modal interactions, …, and a host of emerging ubiquitous, handheld and context-aware interactions”

Carroll, John M., “Human Computer Interaction - brief intro”. In: Soegaard, Mads and Dam, Rikke Friis (eds.). "The Encyclopedia of Human-Computer Interaction, 2nd Ed.". Aarhus, Denmark: The Interaction Design Foundation.
https://www.interaction-design.org/encyclopedia/human_computer_interaction_hci.html

Interaction and Interface

“Roughly speaking, **interaction** refers to an **abstract model** by which humans interact with the computing device for a given task, and an **interface** is a choice of **technical realization (hardware or software)** of such a given interaction model.”

(Kim, 2015)

About this course:

Main objectives you should attain:

- understanding of what is the Human-Computer Interaction field

- understanding the importance of the User Interface (UI) of an interactive system;

- knowledge of the fundamental concepts, methods and techniques for the:
    - design
    - implementation
    - evaluation of Interactive Computer Systems

Course information

- Web
  - http://sweet.ua.pt/bss
  - More materials in moodle.ua.pt

- Team:
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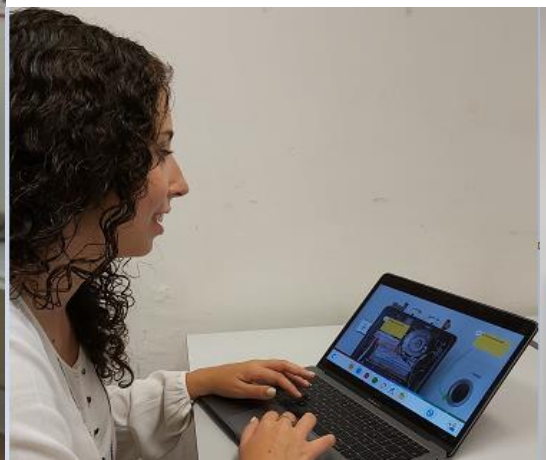
Lectures and Lab classes

Lectures - slides, discussion and paper presentation

Lab classes – design, implementation and evaluation of User Interfaces (UIs) and interactive systems

- participation in user studies (if possible …)



You will have the opportunity to:

Learn the fundamentals of this pivotal field

Attend the presentation of cutting edge research

Test and use new interaction and display equipment

Develop for various platforms

And participate in user studies

Attending lectures and lab classes

- Attending lectures will help you in several ways
- Attending lab classes is mandatory, will be registered formally and you cannot pass if you do not have the minimum required
- Working students must contact faculty members during the two first weeks of the semester

Lectures (subject to minor changes)
Wednesdays

1- Introduction to the course

2- Definition of HCI, User Interface (UI), Usability and UX principles and paradigms

3- The user: the Human Information Processing System (HIPS)

4- The user (cont). Mental models and conceptual models

5- Introduction to User-Centered Design and S/W patterns for UIs

6- Interaction Styles: Menus and direct manipulation

7- Other Interaction styles

8- Models for UI design (user models, task analysis)

9- Screen layout. Color models and color usage

10- Evaluation methods (more detailed study)

11- Input and output devices

12- 3D user interfaces (extended reality)

13- Paper presentation

14- Paper presentation

Lectures

1 - 15-02-2023
2 - 22-02-2023
3 - 01-03-2023
4 - 08-03-2023
5 - 15-03-2023
6 - 22-03-2023
7 - 29-03-2023
8 - 12-04-2023
9 - 19-04-2023
10 - 03-05-2023
11 - 10-05-2023
12 - 17-05-2023
13 - 24-05-2023
14 - 31-05-2023

OT sessions:
Thursday – 19h15
Via registration in Moodle until Thursday 15h00

Lab classes (subjected to minor changes)

- Introduction to the Lab classes.
- **Assignment n.1 (evaluate an interactive system) (groups of 3 students)**
- Evaluation of UIs/Interactive systems using analytical methods
- **Presentation and discussion of assignment n. 1.**

- **Assignment n.2 (develop a prototype of an interactive system) (3 students)**
- Human-Centered approach to design and develop interactive systems: requirements analysis; prototyping and evaluation; prototyping and evaluation
- **Presentation and discussion of assignment n. 2**

Devices that can be used in the lab classes

Assessment

Final Mark -> Exam (50%) + paper presentation (10%) +

1st assignment (10%) + 2nd assignment (30%)

Minimum mark in each component (TP / P) – 7.5/20

- paper from a conference -> 15 min presentation (groups of 2 students)

- assignment n. 1: **evaluation with analytic methods** -> presentation and discussion (groups of 3 students)

- assignment n. 2: design, implementation and test of a interactive prototype following **User Centered Design** -> presentation, demo, discussion (groups of 3 students)

Exams: multiple choice + True/false + open questions

Bibliography

- Sharp, H., Preece, J., and Rogers, Y., *Interaction Design- beyond Human-Computer Interaction*, Wiley, 2019
- Dix, A., J. Finle, Abowd, B. Russel, G., *Human Computer Interaction*, 3rd. ed., Prentice Hall, 2004
- Kim, G. J., *Human–Computer Interaction-Fundamentals and Practice*, CRC Press, 2015
- Cooper, A. et al.., *About Face 4: The Essentials of Interaction Design*, 4th ed., Wiley, 2014
- Shneidermen, B., *Designing the User Interface, Strategies for Effective Human-Computer Interaction*, 6th ed., Addison Wesley, 2016
- Soegaard, M. and, Rikke Friis, D.(eds.). *The Encyclopedia of Human-Computer Interaction*, 2nd Ed. Aarhus, Denmark: The Interaction Design Foundation. https://www.interaction-design.org/encyclopedia/interaction_design.html
- Mitchell, P., *A Step-by-step Guide to Usability Testing*, iUniverse, 2007
- Nielsen, J., *Usability Engineering*, Academic Press, 1993

Portuguese bibliography

- Manuel J. Fonseca, Pedro Campos, Daniel Gonçalves, *Introdução ao Design de Interfaces*, FCA, 2012

Moodle Walkthrough

News forum

Course web page

Registration to the next OT (until Thursday 15h00)

OTs are held Thursday at 19:00 online (zoom link below) :

Use this option to sign up for OTs. You can change your answer (i.e., register or unregister) until 3 pm on the same day.

Paper Presentation

Vote on a paper presentation

Paper selection and presentation guidelines

MUM2022 - long papers

Select a date for Paper Presentation TP1 - Wednesday 11h -13h

Select only one time slot and indicate the names of both students

Indicate a paper to present - TP1 - Wednesday - 11h-13h

Lectures Slides

Highlighted

Introduction to the course- 2023

Paper presentation assignment (groups of two students)

- Wednesday 9h-11h – 30 paper presentations
- Wednesday 11h -13h - 30 paper presentations
- Wednesday 14h -16h - 30 paper presentations
- Starting on March 1st

Submission of paper presentation slides

Please submit the presentation slides using the following file name format:

TPX_nmec1+nmec2_presentation date; e.g.:

TP1_120000+120001_March_1.pdf

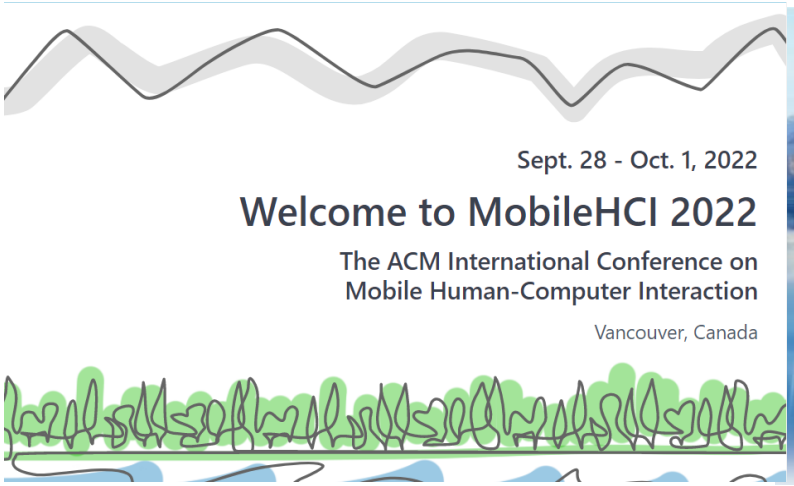
Paper Presentation

Vote on a paper presentation

Selecting a paper:

This year you may read and present papers from one of these major conferences

https://humanrobotinteraction.org/2022/
https://dl.acm.org/doi/proceedings/10.5555/3523760



https://mobilehci.acm.org/2022/
https://dl.acm.org/toc/pacmhci/2022/6/MHCI

https://ieeexplore.ieee.org/xpl/conhome/9756663/proceeding?isnumber=9756727&pageNumber=2
https://ieeevr.org/2022/

Selecting a paper:

Or from one of these smaller conferences

MUM 2022

21st International Conference on Mobile and Ubiquitous Multimedia

https://www.mum-conf.org/2022/schedule/#s2

MUM2022 - long papers

(long papers available in Moodle)

ACM Spatial User Interaction 2022

https://sui.acm.org/2022/

Papers available from:
https://sui.acm.org/2022/program

- Volunteers to present a paper next week?

Note that:

- Volunteers have absolute priority in selecting the paper

- And will have this assignment done (10% of final mark) soon in the semester !

Until March 1st

Each group of two students should:

- select paper (with >=8 pages) from the conference proceedings
  (HRI2022, MobileCHI2022 IEEEVR2022, MUM2022, SUI2022)

- indicate the preferred paper via a form and select the date via doodle

- wait for approval of the paper and date (posted on Moodle)

- read the paper presentation guidelines (available at the course web page)

- prepare a 15 min presentation (~15 slides)

- submit the slides via Moodle

Submission of paper presentation slides

Please submit the presentation slides using the following file name format:

TP1_120000+120001_March_1.pdf

“ the HCI discipline investigates and tackles all issues related to the design and implementation of the interface between humans and computers. “

Some Present and Future trends:

Gesture interfaces

Virtual and augmented reality, Mixed reality

Large public displays

Brain-computer interfaces

Human-Robot interfaces

Natural Conversational Speech Interfaces

Affective States and Human-Computer Interactions

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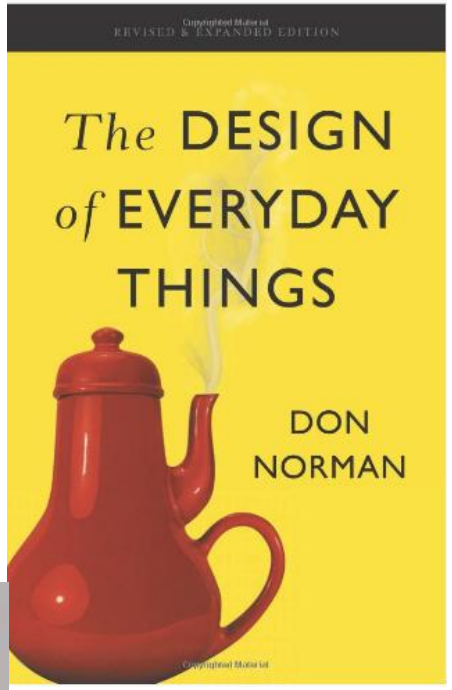
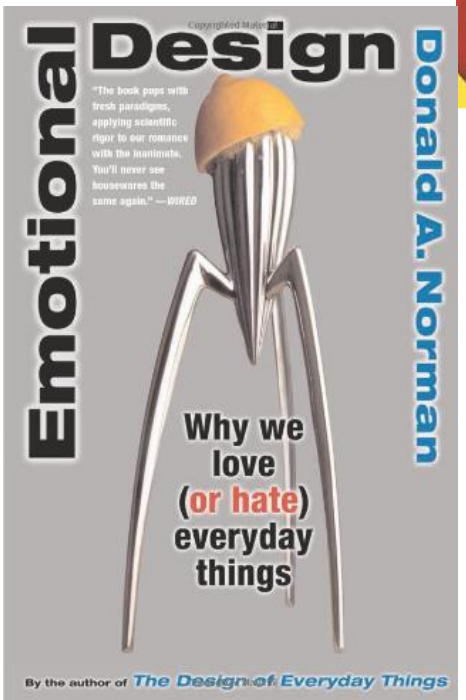
Interesting books

- Donald Norman, The design of everyday things, Basic Books, Revised Edition, 2013

- Donald Norman, Emotional Design: Why We Love (or Hate) Everyday Things, Basic Books, 2010





- For next week:
  - Select the presentation dates you prefer via doodle
  - And the papers you prefer via the form available in Moodle
  - Think about two interactive systems/applications to evaluate

Good luck with your work
in this course and have fun!