Human-Computer Interaction
2023/24

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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:
  - Beatriz Sousa Santos
    - bss@ua.pt
  - Paulo Dias - Coordinator
    - paulo.dias@ua.pt
  - Samuel Silva
    - sss@ua.pt
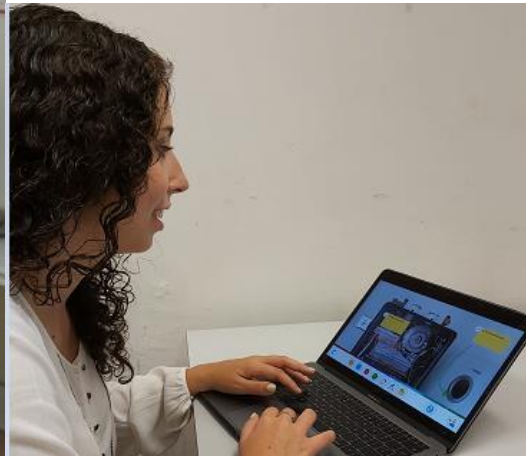 - Bernardo Marques
    - bernardo.marques@ua.pt

Lectures and Lab classes

Lectures - fundamental concepts; methods to support practical assignments
paper presentation and discussion

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

- participation in user studies (if possible …)

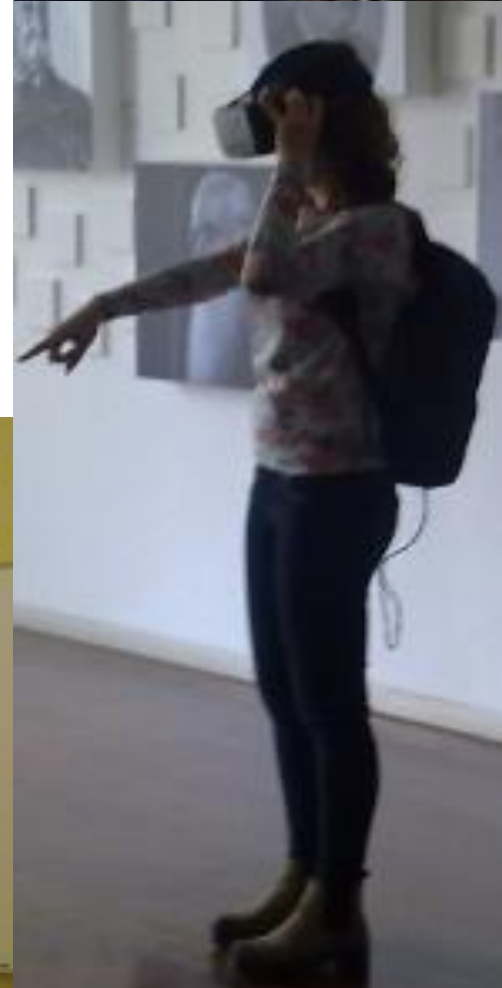**You will have the opportunity to:**

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,
     addressed topics are to be applied in the practical assignments!

- 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 paulo.dias@ua.pt during the two first weeks of the semester

Lectures (subject to minor changes)
Wednesdays/Thursday

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)

+ two Wednesdays for paper presentations

Lectures

Wednesday

1 - 14-02-2024
2 - 21-02-2024
3 - 28-02-2024
4 - 06-03-2024
5 - 13-03-2024
6 - 20-03-2024
7 - 28-03-2024
8 - 10-04-2024

9 - 17-04-2024
10 - 24-04-2024
11 - 08-05-2024
12 - 15-05-2024
13 - 22-05-2024
14 - 29-05-2024
15 – 05-06-2024

Thursday

1 - 15-02-2024
2 - 22-02-2024
3 - 29-02-2024
4 - 07-03-2024
5 - 14-03-2024
6 - 21-03-2024
7 - 04-04-2024

8 - 11-04-2024
9 - 18-04-2024
10 - 09-05-2024
11 - 16-05-2024
12 - 23-05-2024

OT sessions:
Thursday – 18h – 18h30
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

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Assessment

Final Mark -> Exam (45%) + paper presentation (10%) +

1st assignment (10%) + 2nd assignment (35%)

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 (possibly)

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

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

- Mitchell, P., *A Step-by-step Guide to Usability Testing*, iUniverse, 2007

- Nielsen, J., *Usability Engineering*, Academic Press, 1993

Moodle Walkthrough

News forum

Course web page

Registration to the next OT (until Thursday 15h00)

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·

Introduction to HCI - Usability/UX principles and paradigms

Paper presentation assignment (groups of two students)

- Wednesday 9h-11h – 28 paper presentations

- Wednesday 11h -13h - 28 paper presentations

- Thursday 14h -16h - 20 paper presentations

- Starting on February 28th

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

ACM/IEEE International Conference on Human-Robot Interaction

March 13-16, 2023 Stockholm, SE

https://humanrobotinteraction.org/2023/toc/
https://dl.acm.org/doi/proceedings/10.5555/3523760

26 - 29 September 2023

Welcome to MobileHCI 2023

The ACM International Conference on Mobile Human-Computer Interaction

Athens, Greece

IEEE VR 2023 SHANGHAI

25-29 March   30th Anniversary of IEEE VR

https://dl.acm.org/toc/pacmhci/2023/7/MHCI
https://mobilehci.acm.org/2023/index.php

https://ieeexplore.ieee.org/xpl/conhome/10108080/proceeding?isnumber=10108082&sortType=vol-only-seq&pageNumber=2
https://ieeevr.org/2023/program/papers/

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Selecting a paper:

Or from one of these smaller conferences

22nd International Conference
on Mobile and Ubiquitous Multimedia
December 3rd — 6th
Vienna, Austria

https://www.mum-conf.org/2022/schedule/#s2
https://dl.acm.org/doi/proceedings/10.1145/3626705

ACM Symposium on Spatial User Interaction

SYDNEY, AUSTRALIA

https://dl.acm.org/doi/proceedings/10.1145/3607822
https://sui.acm.org/2023/

- Volunteers to present a paper in two weeks?

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 7th

Each group of two students should:

- select paper (with >=8 pages) from the conference proceedings
          (HRI2023, MobileCHI2023 IEEEVR2023, MUM2023, SUI2023)

- indicate the preferred paper via a form

 and then:

- 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 possible Present and Future trends:

Gesture interfaces

Extended reality

Human-robot interfaces

Conversational user interfaces

Empathic computing

Brain-computer interfaces

...

- Next week:

  – Select the presentation dates you prefer
  – 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!