



02JSKxx

# Human Computer Interaction

**Introduction to the Course**

Luigi De Russis, Fulvio Corno

Academic Year 2021/2022



Politecnico  
di Torino



# Goal

- Understanding how to design the user experience when interacting with modern applications, devices, and environments
- Gaining in-depth knowledge of a human-centered process to create interactive systems
  - and how to apply it in practice
- Becoming familiar with methods to gather and listen to users' needs
- Learning to evaluate interactive systems with their users

# Why?



source: [https://www.instagram.com/p/CT8qVYaDE\\_R/](https://www.instagram.com/p/CT8qVYaDE_R/)

Deep down inside every software developer, there's a budding graphic designer waiting to get out. And if you let that happen, you're in trouble. Or at least your users will be, anyway...

Jeff Atwood, 2006

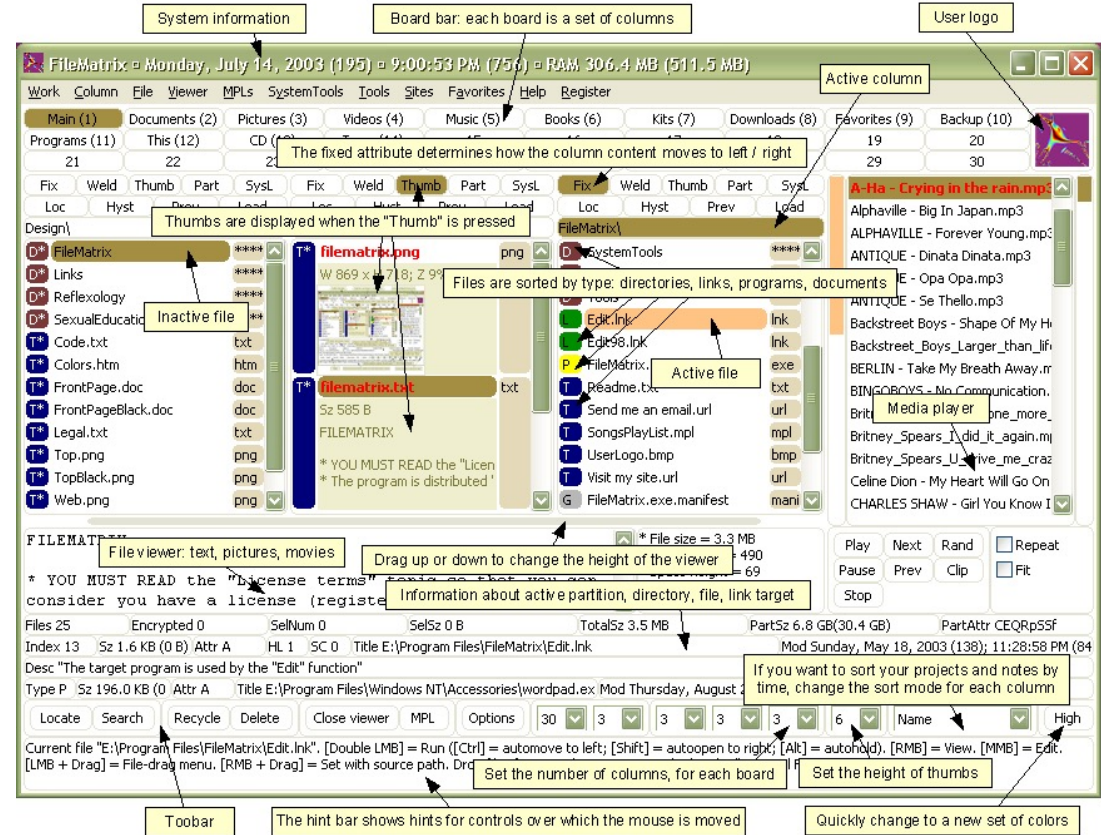
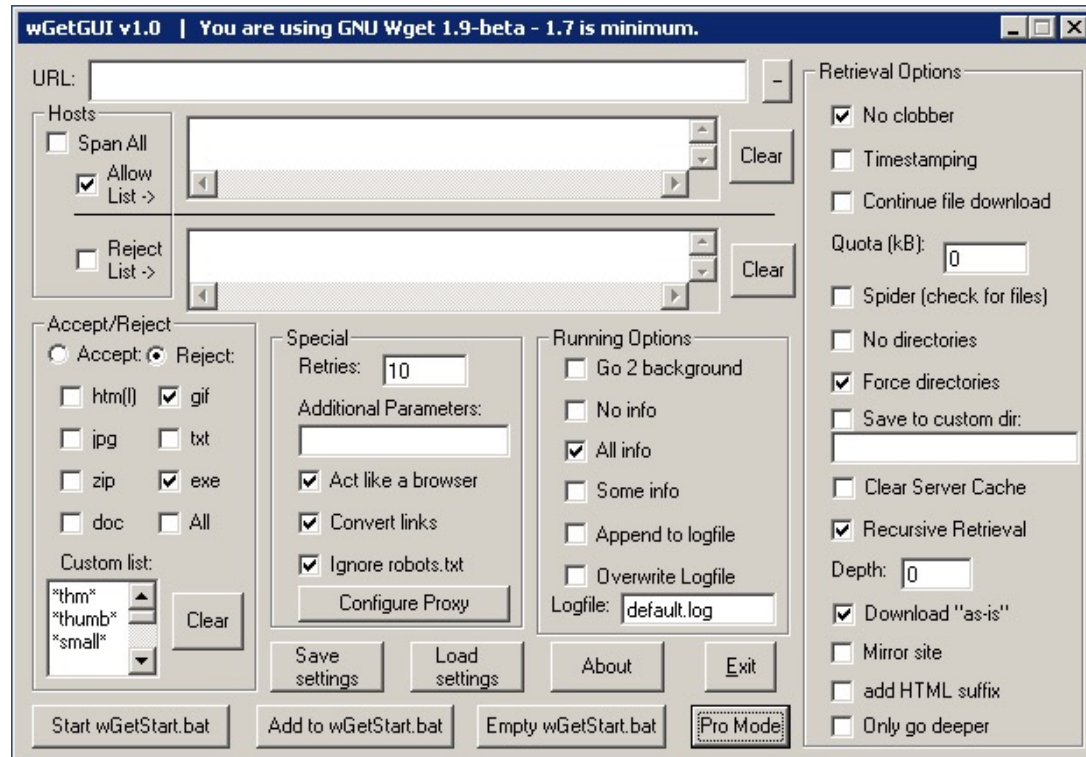
<https://blog.codinghorror.com/this-is-what-happens-when-you-let-developers-create-ui/>

The two hardest problems in computer science are: (i) people, (ii) convincing computer scientists that the hardest problem in computer science is people, and, (iii) off by one errors.

Prof. Jeffrey P. Bigham, 2018

<http://www.cs.cmu.edu/~jbigham/>

# Developers' Attitude



[https://thedailywtf.com/articles/Classic\\_WTF\\_-\\_Enter\\_the\\_Matrix](https://thedailywtf.com/articles/Classic_WTF_-_Enter_the_Matrix)

# What We Will Learn

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Introduction to Human-Computer Interaction (10%)

Definitions, the human, the computer, vision of the future

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Building interactive applications with a human-centered process (35%)

Main tasks and methods to design, develop, and evaluate an interactive application

Needfinding strategies, low- and high-fidelity prototypes, mental models and visual design, heuristic evaluation, and basic concepts and methods for controlled experiments

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Application & Projects (30%)

Practical part on a specific application domain and interaction technology

Web applications

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“Beyond WIMP” paradigms (25%)

Tangible interaction, wearables, voice user interfaces, gestures, eye tracking, interaction with AI/IoT systems, ...

Contemporary examples and development tools

Thematic seminars on emerging topics and case studies

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# Weeks and Topics... At a Glance!

1. Introduction to HCI
2. Needfinding
3. Task Analysis
4. Prototyping
5. Design guidelines, principles, and heuristics
6. Heuristic Evaluation
7. Visual Design and Fluid Navigation
8. Design for Diversity
9. Multimodal Interaction
10. Interacting with AI
11. Evaluation: Usability Testing
12. Evaluation: Controlled Experiments

# Methodology

- Learning method
  - project-based → students learn by doing a project, in teams
  - problem-based → the project work starts from elicited and real users' needs
- Projects developed **during** the semester, mostly in the labs, with intermediate milestones and deliverables
- Such deliverables will serve as the main way to provide **feedback** about the projects, and they will *not* be graded *until* the exam
  - Feedback is there to help students improve the next step in their projects, in the course, in addition to possibly improve the (final) grading



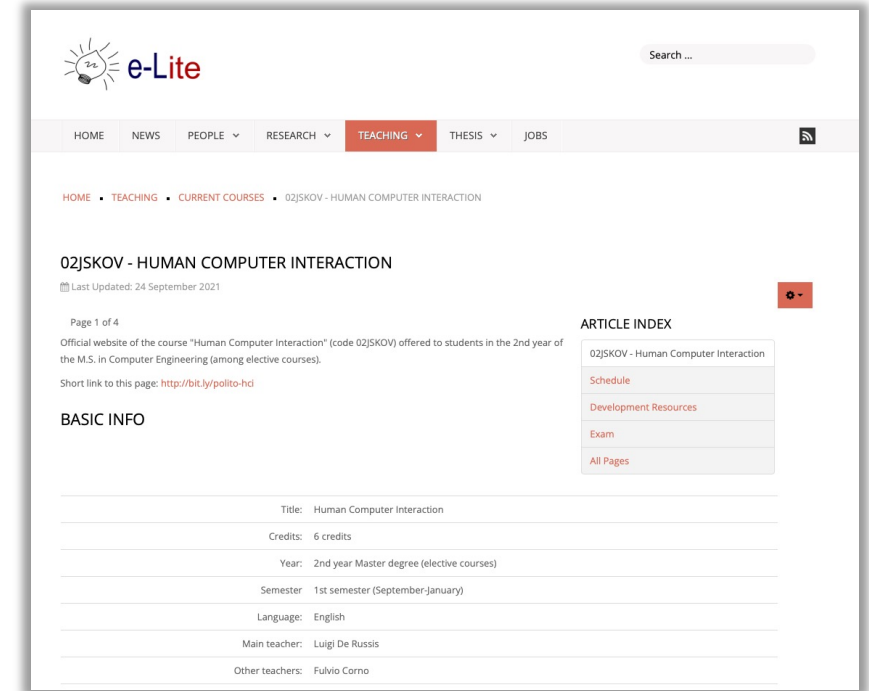
# Course Organization

- Classes
  - 3 h/week
  - Lectures + exercises (*mixed*)
  - Video-recorded
- Laboratories (LABINF)
  - 1.5 h/week
  - 2 Lab slots
  - Starting from **Week 1**
  - Mainly for group projects
  - Slot pre-selected by groups

	MO	TU	WE	TH	FR
08:30				Lecture 8I	
10:00				Lab LABINF	
11:30				Lab LABINF	
13:00		Lecture 7T			
14:30					
16:00					
17:30					

# Material

- Course website - <http://bit.ly/polito-hci>
  - Slides, exercises, lab texts
  - Full schedule
  - Deliverable templates and deadlines
  - Supplementary material
- Video lectures (for classes, only)
  - YouTube - [https://youtube.com/playlist?list=PLs7DWGc\\_wmwT-1N2vbRkLWrM6LIker9A-](https://youtube.com/playlist?list=PLs7DWGc_wmwT-1N2vbRkLWrM6LIker9A-)
  - Portale della Didattica
- GitHub - <https://github.com/polito-hci-2021>
  - Examples, exercises, group work, ...



The screenshot shows the e-Lite website interface. At the top, there is a search bar and a navigation menu with options: HOME, NEWS, PEOPLE, RESEARCH, TEACHING (highlighted), THESIS, and JOBS. Below the navigation, a breadcrumb trail reads: HOME • TEACHING • CURRENT COURSES • 02JSKOV - HUMAN COMPUTER INTERACTION. The main content area is titled '02JSKOV - HUMAN COMPUTER INTERACTION' and includes a sub-header 'Last Updated: 24 September 2021'. The page is identified as 'Page 1 of 4'. A short description states: 'Official website of the course "Human Computer Interaction" (code 02JSKOV) offered to students in the 2nd year of the M.S. in Computer Engineering (among elective courses)'. A short link is provided: <http://bit.ly/polito-hci>. On the right side, there is an 'ARTICLE INDEX' with links for '02JSKOV - Human Computer Interaction', 'Schedule', 'Development Resources', 'Exam', and 'All Pages'. Below this, a 'BASIC INFO' section is displayed in a table-like format:

Title:	Human Computer Interaction
Credits:	6 credits
Year:	2nd year Master degree (elective courses)
Semester:	1st semester (September-January)
Language:	English
Main teacher:	Luigi De Russis
Other teachers:	Fulvio Corno





# Communications

- We will use Slack for all communications
  - among students, with teachers, etc.
  - new to Slack? -> <https://slack.com/resources/using-slack/how-to-use-slack>
- Join with your @studenti.polito.it email at <https://join.slack.com/t/polito-hci-2021/signup>
- Announcements and official information in **#general**
- Feel free to contact the teachers for feedback and ask questions in **#discussion**
- Groups of students may *create private channels* for collaborating on their project



# Office Hours

- Every **Monday** from **14:00** to **16:00**
- On Zoom:
  - <https://polito-it.zoom.us/j/91381036613?pwd=c2wwV2hndGkrVG1NdFJlOEZ3cVpwZz09>
- Starting from *October 4*
- Students can *freely* join the call at any moment, if they have questions, suggestions, doubts, ...
- If needed, we can also meet *in-person* (send a DM on Slack)

# The Exam

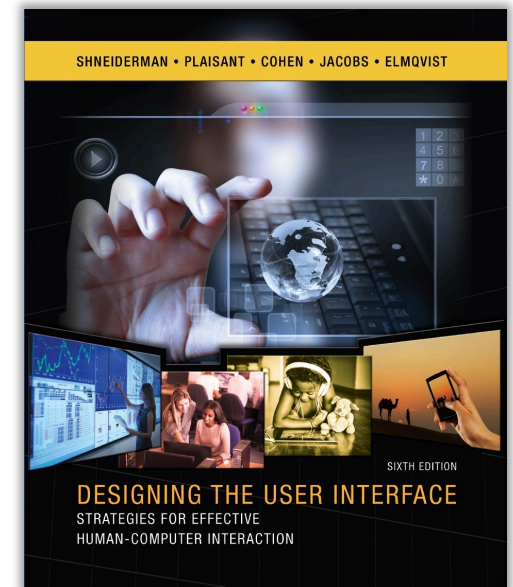
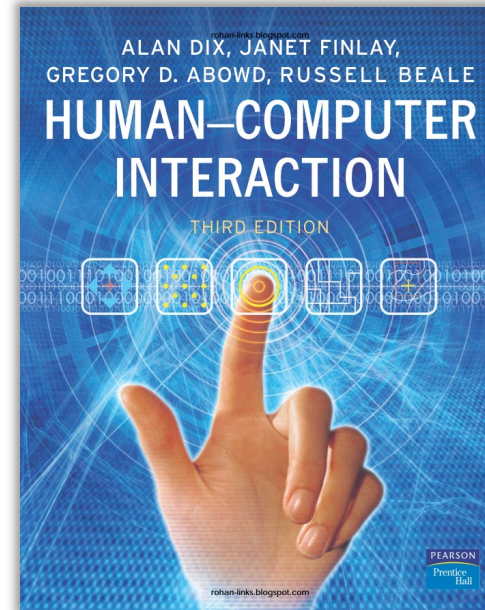
1. Written test [40%: 13 points, minimum 7]
    - Design methods, guidelines, exercises, ...
    - No coding
    - Four open questions, 1 hour
    - Sample/past exams on the course website (under "Exams")
  2. Project evaluation (in group) [60%: 20 points]
    - Deliverables
    - Prototype (source) code
    - Oral discussion
- More on projects in a while!
- Both parts will be in presence and must be passed **in the same academic year**
    - in any order

# Oral Discussion

- Each group will present their project with:
  - a brief *introduction* to the project
  - a *demonstration* of the implemented prototype, where students cover the main features and everybody in the team speak
  - and answering some *questions* from the teachers, about what students showed and/or about the submitted deliverables
- **Beware:** the demonstration is typically the most critical part
  - it needs to be carefully prepared, and not rigged up at the moment
- Teachers will have already read all the deliverables and had a look at the project code, so there is no need to cover those

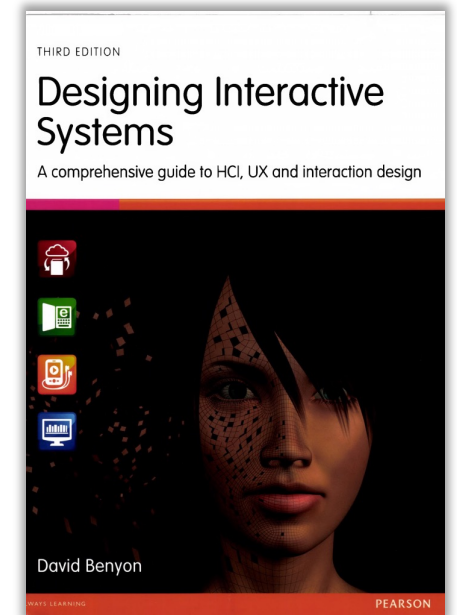
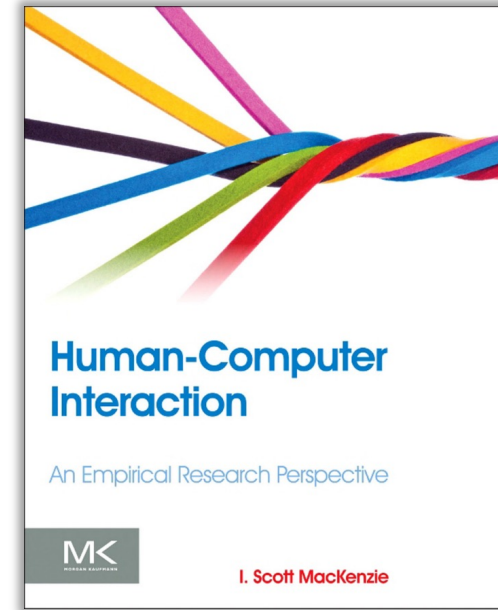
# Suggested Books

- Alan Dix, Janet Finlay, Gregory D. Abowd, Russel Beale, "Human-Computer Interaction", 3<sup>rd</sup> edition, Prentice Hall, 2004, ISBN 0-13-046109-1
- Shneiderman, Plaisant, Cohen, Jacobs, Elmqvist, "Designing the User Interface: Strategies for Effective Human-Computer Interaction", 6<sup>th</sup> edition, Pearson, 2016, ISBN 013438038X / 9780134380384



# Suggested Books

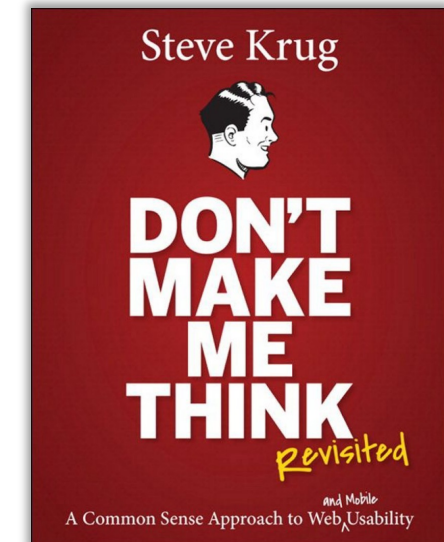
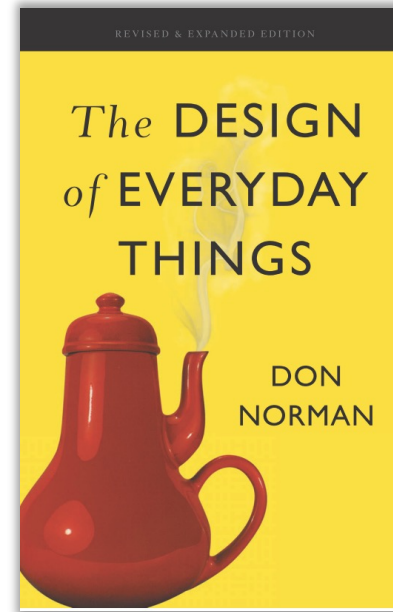
- I. Scott MacKenzie, "Human-Computer Interaction: An Empirical Research Perspective", Morgan Kaufmann, 2013, ISBN 978-0-12-405865-1
- David Benyon, "Designing Interactive Systems", 3<sup>rd</sup> edition, Pearson, 2014, ISBN 978-1447920113





# Suggested Books

- Don Norman, "The Design of Everyday Things: Revised and Expanded Edition", Hachette UK, 2013, ISBN 0465072992/9780465072996
- S. Krug, "Don't Make Me Think: A Common Sense Approach to Web and Mobile Usability - revisited", Pearson Education, 2014, ISBN 0321648781/9780321648785



# Contacts



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