

Interaction Design Studio 2023-2024

Applied Informatics

1.1 COURSE INTRODUCTION

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Applied Informatics - Lesson 1: Outline

- Who we are
- Contents and Schedule
- Exam
- Interaction Paradigms and Related Technologies
- Examples of projects
- Q&A

Who we are



i3lab.polimi.it/



Department of Electronics, Information and Bioengineering

i3lab: Who we are

A multidisciplinary team that includes

- PhD students, Master Students, Post-Docs, Research Assistants, senior Researchers, with heterogeneous backgrounds: software engineering, human-computer interaction, psychology, cognitive rehabilitation, and design.
- Focus: innovative interactive technologies and applications in various domains including learning, health and well-being, tourism

Franca



Pietro C.

ICT Engineer, PhD – Research Assistant



Francesco

ICT Engineer, PhD
(now at Limpstadt Univ.)



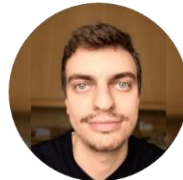
Mathyas

ICT Engineer, PhD
student



Eleonora

Psychologist, PhD student
Now at ARDUINO Italy



Giacomo

ICT Engineer, PhD student



Alberto

ICT Engineer, PhD student



Fabio

ICT Engineer PhD
(now at MIT, US)



Mattia

ICT Engineer, PhD.
Senior researcher



Valentin

HCI designer, PhD – Research Assistant



Micol

ICT Engineer - Senior researcher



Matteo

Engineer. PhD student

Your teachers from i3lab



Franca Garzotto



Micol Spitale

ICT Engineer - Senior researcher

**MAIN
COURSE CONTACT POINT**

Who we are

Multidisciplinary co-operations with:

Therapeutic centers

- 20 in Italy
- 1 in EU

Industry

- In Italy: TIM, Reply, IBM,
- in EU: IMEC (B), Brightcape (NL)

Universities:

- University of Milan Bicocca
- Catholic University of Milan
- MIT (Cambridge, USA)
- Georgia Institute of Technology (Atlanta, USA)
- University of Southern California (Los Angeles, US)



OUR TECHNOLOGIES



MOTION-BASED



HUMAN-ROBOT



SMART OBJECTS



**MULTISENSORY
ENVIRONMENTS**



VIRTUAL REALITY



**CONVERSATIONAL
INTERACTION**

Our Main Target Groups

Children with disability

8



COGNITION

Perceptual skills, attention span, processing similarities and differences...



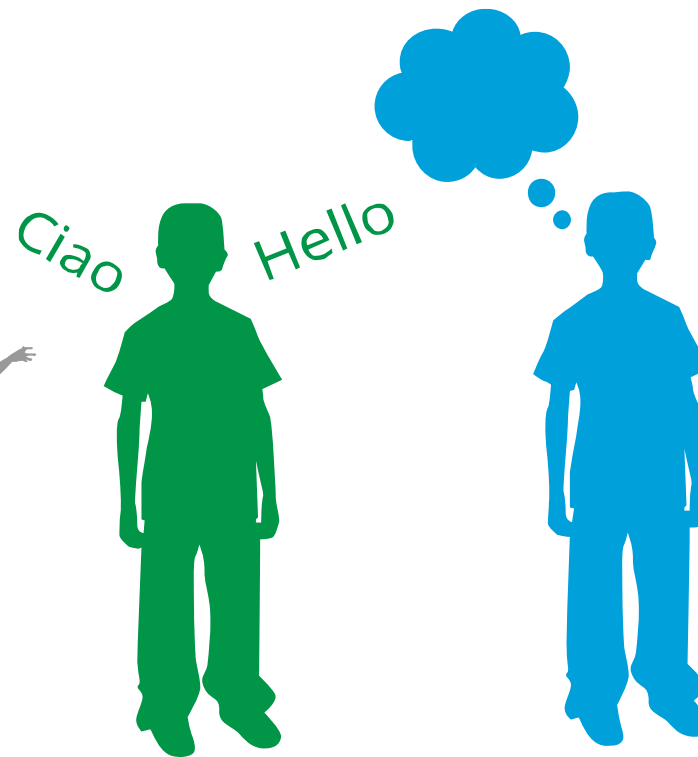
MOTOR

Gross and fine motor skills, Movement coordination and crossed gestures...



SOCIALIZATION

Interaction and spontaneous relationship, Joint attention and turn taking



COMMUNICATION

Speech and vocalization, Word/mean/image affiliation



IMAGINATION

Abstraction of a real experience, ability to form new images and sensations in the mind



EMOTION

Emotion expression, (happiness, sadness), Affective bonds

General Structure of the course

One course (Information Design Studio), **TWO coordinated modules:**

- prof. Garzotto (Dept. of Electronics, Information, and Bio-engineering)
- prof. Matteo Palu' (Dept. of Design)

Specific activities + Complementary activities concerning the main project

What do the 2 modules share?

- shared goal
- shared “user centered” philosophy
- shared “learning by doing” approach

How the two modules differ?

Different perspectives on Interaction Design:

Engineering perspective

Design Perspective

Different contents and tutoring methods

Different deliverables and evaluation criteria

GENERAL GOAL of the course

Developing skills needed for designing innovation in the field of Interactive Applications

Innovation:

- The process of translating an idea or invention into a good or service that creates value or for which customers will pay.
- To be called an innovation, an idea must be replicable at an economical cost and must satisfy a specific **need**.

Developing innovation skills

Understanding/Anticipating users' needs

+

Thinking out of the box

+

Mastering technology FEASIBILITY (the potential and limitation of technologies)

+

Supporting the quality of the User eXperience (UX)

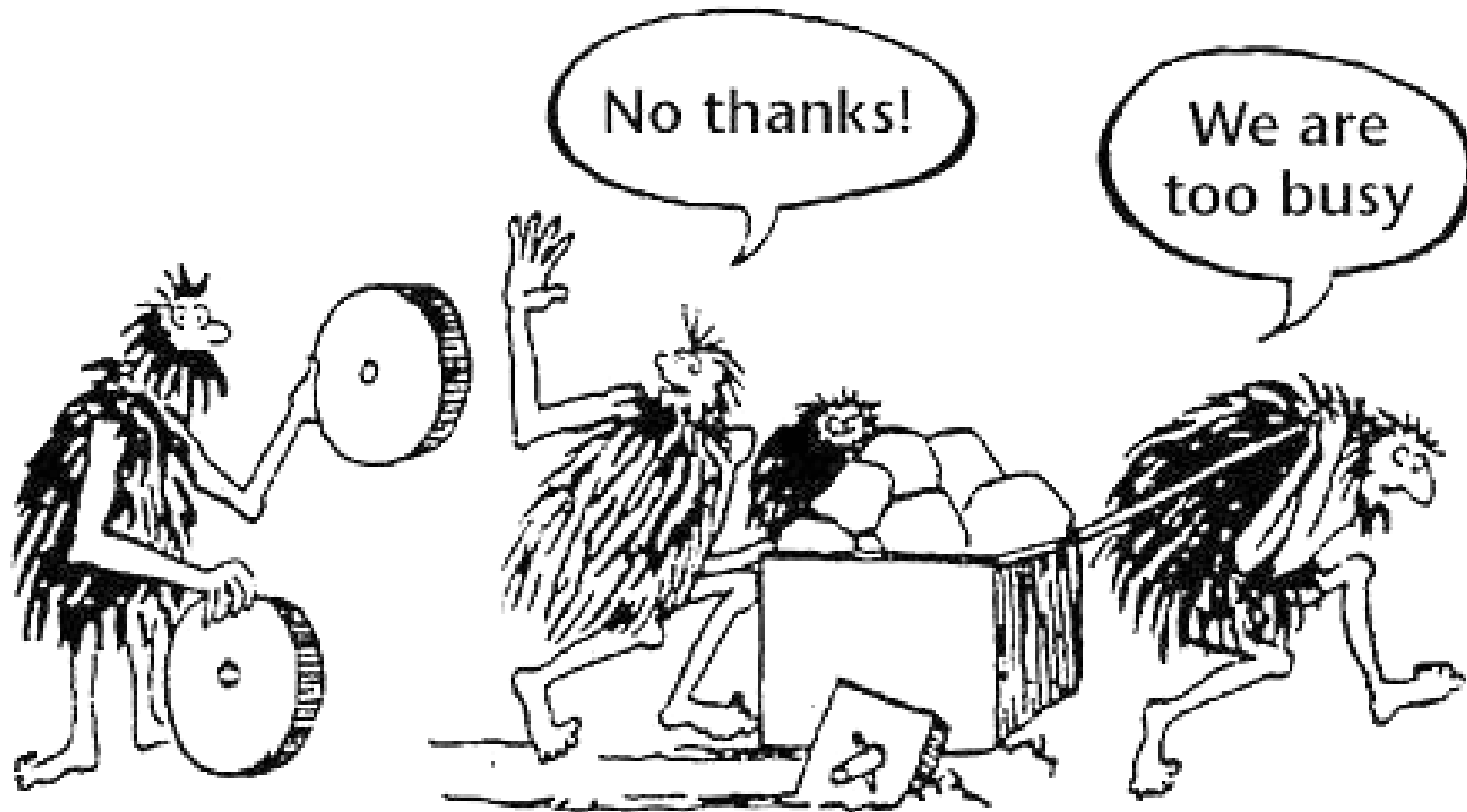
*User Research
Activities*

*Teachers'
stimulation*

*By-examples;
Supervised Project
Work; Techno-
tutoring*

*Supervised Project
Work*

A technologist's perspective on Innovation



A technologist's perspective on User Research



“If I had asked my customers what they wanted,” Henry Ford said, “they would have said a faster horse. Customers don't envision the future, they inform the present” [1].

Corollary: asking the user would have never generated the idea of *car*

[1] From book: “The Ten Faces of Innovation”, IDEO's Strategies for Beating the Devil's Advocate & Driving Creativity Throughout Your Organization By Tom Kelley with Jonathan Littman

Applied Informatics: Teaching and Learning Format

Ex-cathedra lectures

Workshops (with hands-on and assignments) (with Micol)

Autonomous Study and review

- Academic products (scientific papers readings)
- Commercial products

Autonomous and Supervised project work on project requirements and technological feasibility

Lectures contents-Applied Informatics

- Examples of projects
- Interaction Paradigms \leftrightarrow Enabling technologies
- Interaction Design Process (from an Engineering perspective)
 - Requitements modeling
 - Task Modeling
- Scenario-Based Prototyping
- Conversational Technology
- Generative AI

Preliminary
schedule

DATE	MORNING (9.30-13.00)	AFTERNOON (14.15-17.15)
23-feb	Franca: Applied Informatics - Introduction and examples of projects	Intro Interaction design + brief
01-mar	Micol 1 - Introduction to LLM and generative AI	Research
08-mar	Micol 2 - Prompt Engineering and hands-on	Research review
15-mar	Research presentation	Research presentation
22-mar	Micol 3 - GenAI case study - preliminary concepts (prompt4programming)	Concept development
29-mar		
05-apr	Micol - LLM Workshop 1	Micol - LLM Workshop 2
12-apr	Micol - LLM Workshop 3	
19-apr	Concept presentation	Interface design
26-apr		
03-mag	Micol - Requirements tools (social robot canvas)	Prototyping + Testing
10-mag	FG-Techno feasibility review	Design review
17-mag	FG-Techno feasibility review	Design review
24-mag	TDB	Design review
31-mag	FG-Techno feasibility review	Design review
TBD	EXAM	

Evaluation: Applied Informatics

- GenAI Workshops Participation and Outcomes

Evaluation of some aspects of the “project”

- Presentation Quality during official project presentations
- Requirements-Design-Technology consistency
- Quality of the Technological Feasibility Deliverable for the “project”

Project Activities addressed in Applied Informatics

- **Requirements specification**
 - Identifying the main goals of the product/service to be developed, and its main functionalities from an engineering perspective
- **Technology design**
 - Defining the technological components of the product/service
- **Reporting** the work done in the two activities above

Project Activities NOT addressed in Applied Informatics Module

- User Research
 - Eliciting the characteristics of end users and all stakeholders involved, their needs and context of use; analysing the state of the art in the field
- UX design
 - Identifying the user interaction and the interface characteristics of the product/service to be developed

Deliverable for Applied Informatics

- Mini-deliverables progressively assigned during the GenAI workshops
- FEASIBILITY STUDY Deliverables about your project

Feasibility Study Deliverables

- **Digital Assets** (multimedia contents, code (if any)...)
- **Complementary material if any** (e.g., images, videorecordings, data tables...)

REPORT

Main Contents of the feasibility study report:

- Problem Framing
 - Definition of: Stakeholders and their needs, context of use, application goals, constraints (distilled from User Research – see Prof. Brugnoli lectures)
- State of the art
 - What is offered in the research and market arena to address a similar problem
- UX Design specifications
 - Contents, functionality, interaction modes adopted in your application
 - **Scenarios**
- Technical Specifications
 - HD and SW Technologies used, how they fit together, HW-SW architecture

Exam: Main Evaluation Metrics (Applied Informatics)

- M1: Effort invested in the course
- M2: Active participation during workshops and project tutoring
- M3: Workshop deliverables
- M4: Quality of Technological Feasibility Deliverables
 - Quality of the Feasibility Report
 - Quality of the digital material (of any)

Contribution to the evaluation of:

- Quality of the Project Presentation(s)
- Quality of the Project Final Video

Contacts

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Please put both of us in cc in ALL you communications

Questions?