HCI 2025

Themes and Projects Overview

Human Computer Interaction

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Academic Year 2025/2026

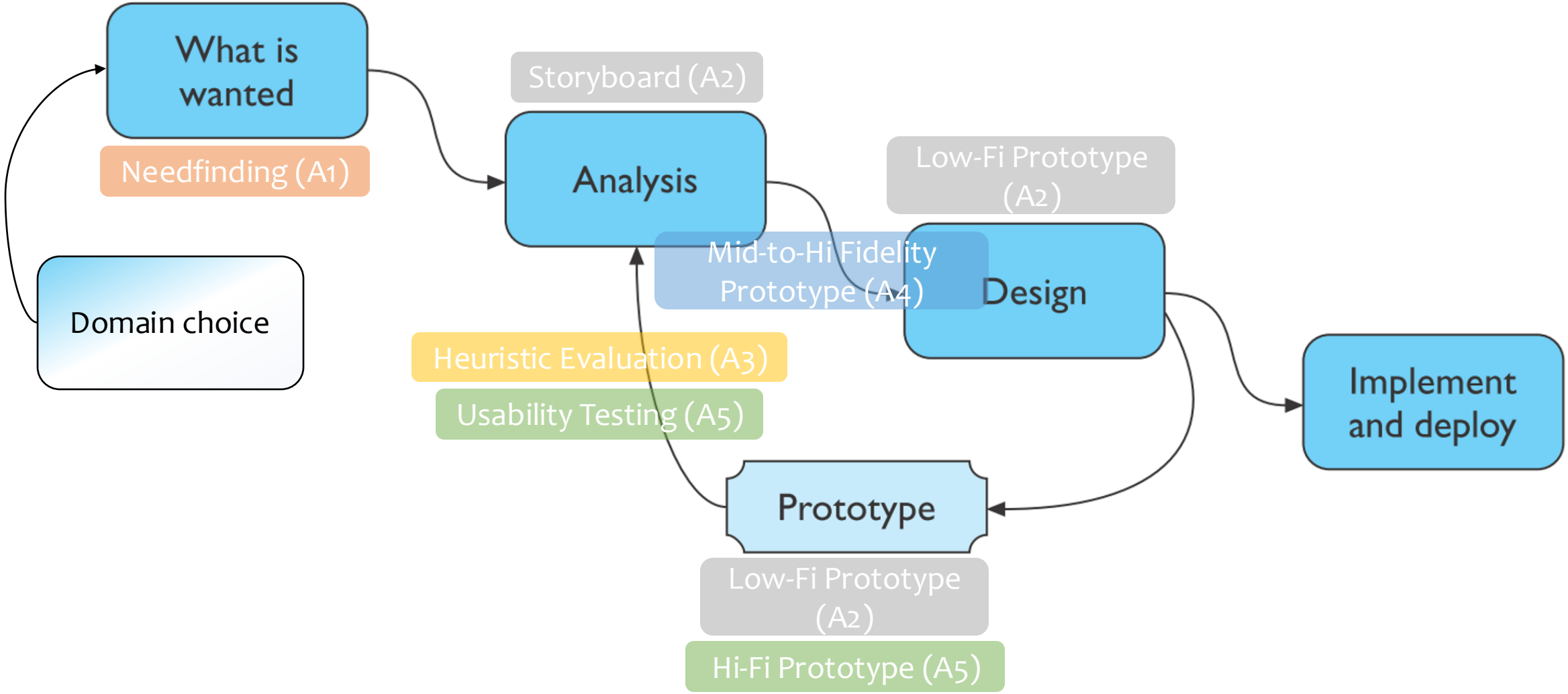
Project Development – Recap

- **Goal:** to give hands-on experience with the modern human-centered design process described during the course
- Projects will be built **step-by-step** and mostly carried on *during* labs
- Project's topic proposed by each group
  - Within the chosen theme and based on *needfinding*
- *Group assignments* represent the various process steps
  - Start during a lab
  - Often followed by *checks* with teachers (in one of the following labs)
  - Evaluated at the exam through reports and discussion

(Planned) Assignments – Recap

- Assignment 1 [group]
  - *Needfinding*
- Assignment 2 [group]
  - *Storyboard and Low-fidelity prototype*
- Assignment 3 [individual]
  - *Heuristic evaluation on another group's low-fidelity prototype*
  - Results passed to the other group
- Assignment 4 [group]
  - *Medium-to-high fidelity prototype*
- Assignment 5 [group]
  - *High-fidelity prototype and usability evaluation*

Human-Centered Process meets Assignments



Projects Completion Level (I)

- The realized final prototype *must* be a **high-fidelity interactive prototype**
  - in code, with any technology you like/know
  - not a final "product"
  - simulating a realistic experience on a specific device

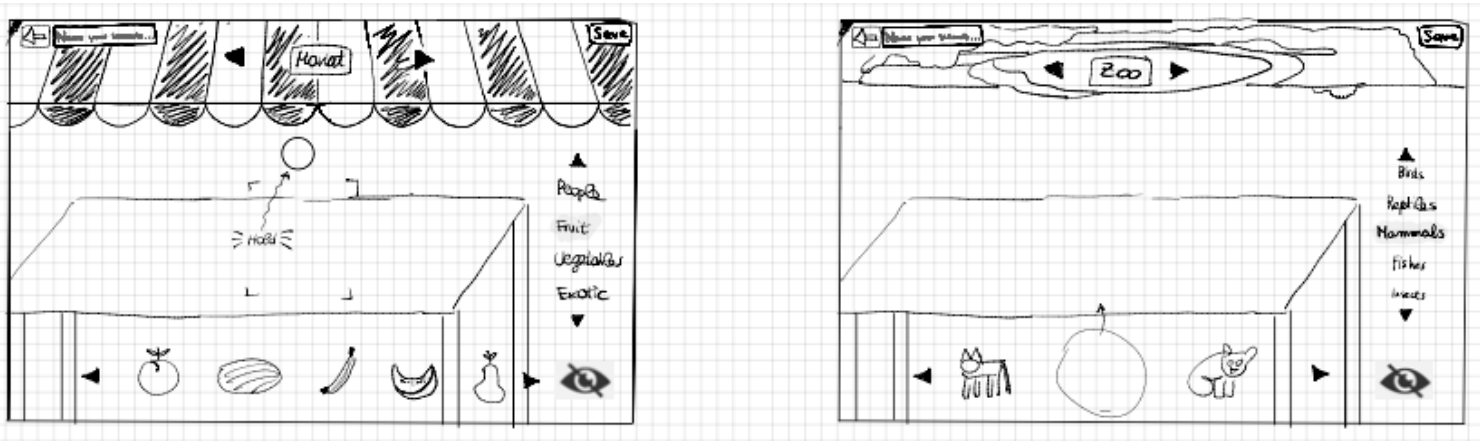
- For example, you can use web technology to built a prototype that *looks like* and *behave as* a mobile application

Projects Completion Level (II)

- The prototype will make some assumptions and won't implement standard or very complex features (even if technically important)
  - Which will be *faked*, *limited* in number, or *hard coded*
  - Your users will be already registered, signed in, and ready to "work" (no sign up, sign in, … mechanism)
  - Any particular behavior will work in a small number of pre-defined cases
  - …

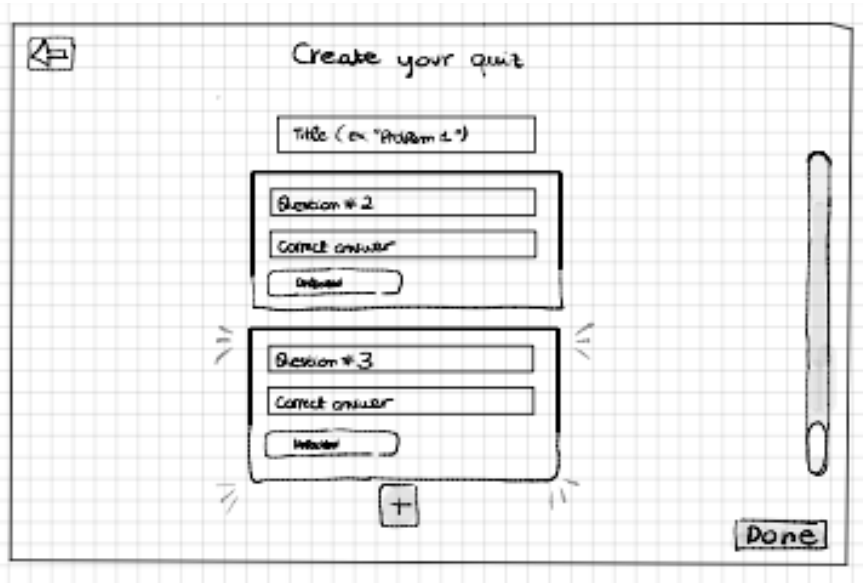
Example (2022) – Theme: ‘AR/VR for Education’

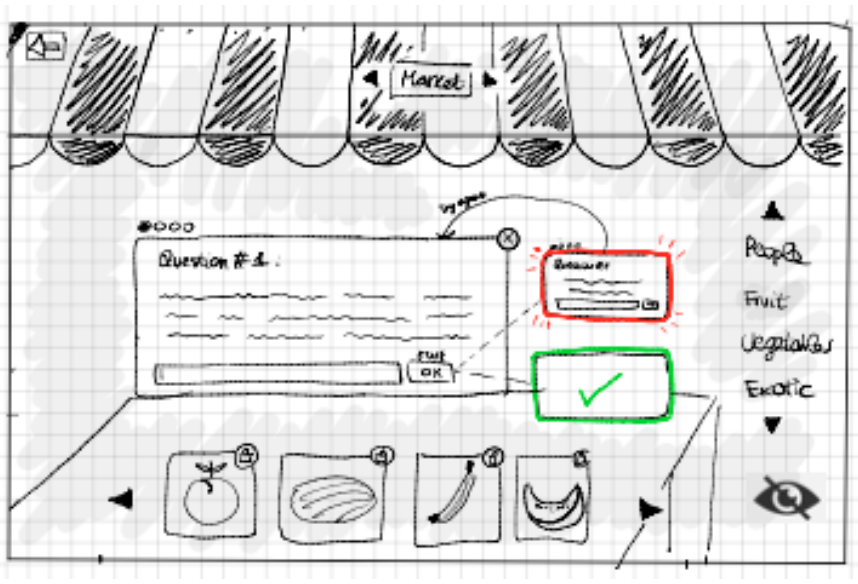
- Chosen domain: supporting elementary school teachers teaching math
- Picked solution (at the end of Assignment 1): “Allow teachers to create more engaging and better explaining scenarios to represent the [math] problem and the logic behind.”
- Excerpt from the 1st low-fi prototype:



Example (2022) – Theme: ‘AR/VR for Education’

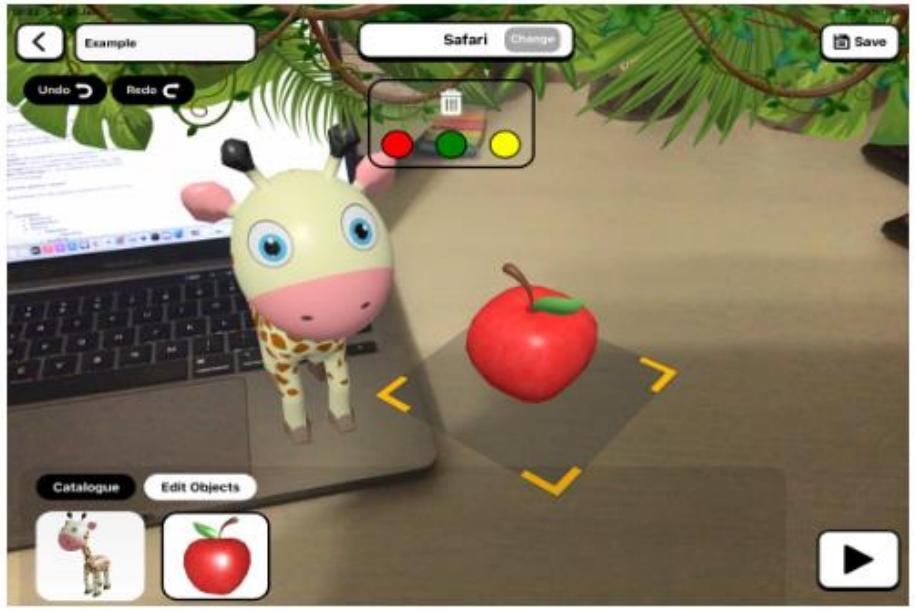
- Excerpt from the 2nd low-fi prototype:





Example (2022) – Theme: ‘AR/VR for Education’

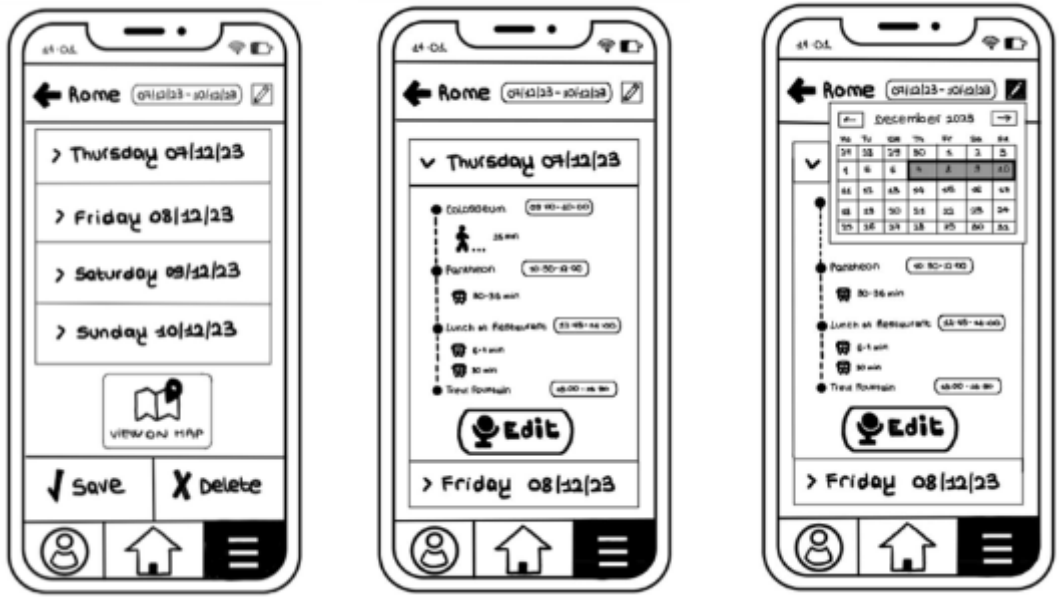
- Excerpts from the hi-fi prototype:



- Main limitations: no pitch-to-zoom, objects are put at the center of the scene, objects don’t respond to the law of physics, objects are hard-coded in a JS file.

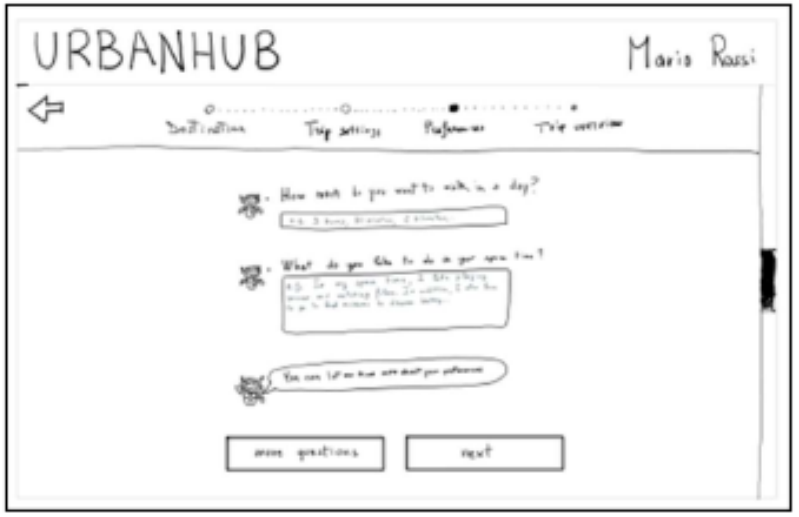
Example (2023) – Theme: ‘Humans meet AI’

- Chosen domain: urban tourism (national and international)
- Picked solution (at the end of Assignment 1): “Survey to understand user preferences and create the itinerary accordingly”
- Excerpt from the 1st low-fi prototype:



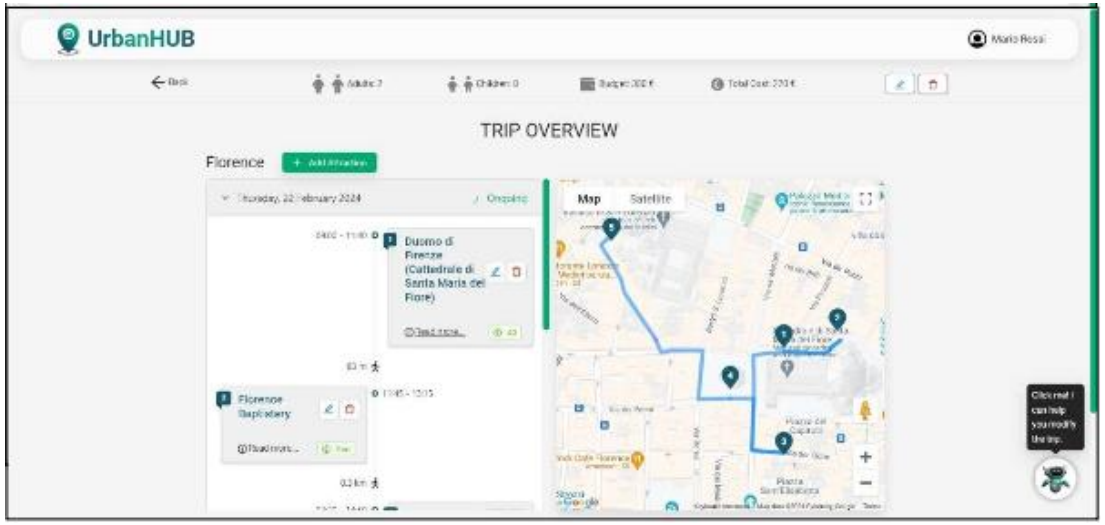
Example (2023) – Theme: ‘Humans meet AI’

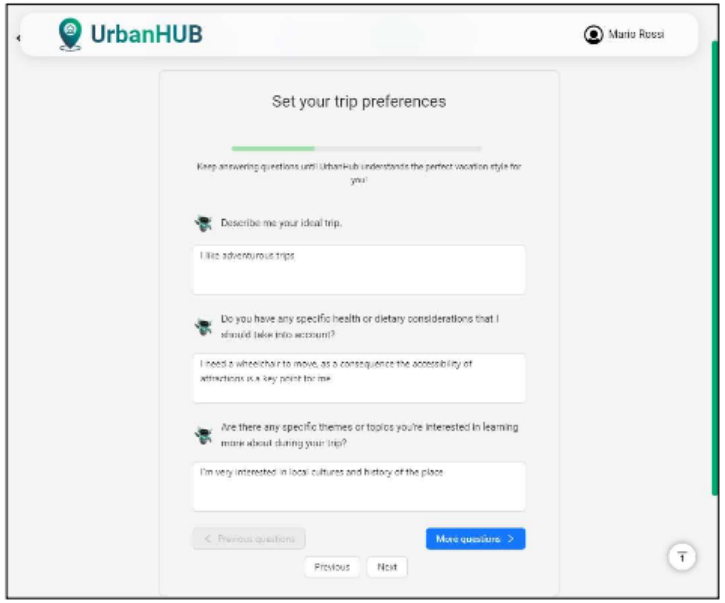
- Excerpt from the 2nd low-fi prototype:



Example (2023) – Theme: ‘Humans meet AI’

- Excerpts from the hi-fi prototype:





- Main limitation: absence of a sophisticated AI driving the trip generation and reliance on a chatbot for edits. The chatbot is limited, as it only accepts a few specific input sentences for trip modifications, discarding other inputs.

This Year's Themes

Theme 1 – Health and Wellbeing

- **Teacher:** Alberto Monge Roffarello (alberto.monge@polito.it)
- **When:** Wednesday 13:00-14:30
- **Description:** Health and wellbeing are fundamental aspects of our daily existence. They encompass physical, mental, and emotional dimensions that can be significantly influenced by our interactions with technology. Within this theme, we will explore innovative ways to create applications and interfaces that empower individuals to lead healthier lives.

Theme 1: Perspectives

- In thinking at the theme, you can ask yourselves:
  - Which health or wellbeing related topics we want to explore?
  - For whom?
  - Are we able to reach out to these people?
- Creativity and originality are *criteria* for the evaluation!
  - Helping students attending a local gym on their own is less original/creative than supporting them in using their smartphones mindfully and effectively managing their digital habits

Theme 2 – Education and Learning

- **Teacher:** Luigi De Russis (luigi.derussis@polito.it)
- **When:** Wednesday 14:30-16:00
- **Description:** Education, either formal or informal, plays a pivotal role in many aspects of our life: you can learn at school, to play sports, to support class' learning activities, within families and to pass cultural traditions and languages. Within this theme, we will explore how we might create educational experiences for helping people learn better and possibly with more fun.

Theme 2: Perspectives

- In thinking at the theme, you can ask yourselves:
  - Which kind of education and learning do we want to focus on? At which scale (class, school, individuals, …)? For formal or non-formal education?
  - For whom?
  - Are we able to reach out to these people?
- Creativity and originality are *criteria* for the evaluation!
  - Helping university students studying a difficult topic is less original/creative than supporting tourists to playfully learn the history of various monuments in the city

Theme 3 – Generative AI beyond Conversation

- **Teacher:** Tommaso Calò (tommaso.calo@polito.it)
- **When:** Wednesday 16:00-17:30
- **Description:** While conversational interfaces have dominated the generative AI landscape, this project explores alternative interaction paradigms where AI operates through non-verbal modalities. The focus is on designing and prototyping systems where generative AI is integrated into user experiences that move beyond text-based conversation, challenging traditional assumptions about how we interact with AI systems.

Theme 3: Perspectives

- In thinking at the theme, you can ask yourselves:
  - In which contexts a non-conversational systems can support people in doing something?
  - Most importantly, which people?
  - Are we able to reach out to these people?
- AI (see later) needs to be included from Assignment 2, not before
  - Right now, just keep it in the back of your mind
- Creativity and originality are *criteria* for the evaluation!
  - Helping students to study with an intelligent tutor is less original/creative than supporting high-school teachers co-creating in-class activities with AI

Human-AI Interaction vs Human-Computer Interaction?

- What is different when AI is in an interactive system?
- AI-based systems are typically performed under **uncertainty**
  - often producing false positives and false negatives
- Many AI components are inherently **inconsistent**
  - they may respond differently to the same text input over time (e.g., autocompletion systems suggesting different words after language model updates)
  - or behave differently from one user to the next (e.g., search engines returning different results due to personalization)

How Can We Design Interactivity with AI?

- In brief, case by case, feature by feature:
  - Decide when "to AI" and when "not to AI"
  - Understand when to automate (i.e., replace the user) and when to augment users' capabilities
  - Balance the uncertainty of AI systems with proper expectations and feedback
- In general, the more **critical** a functionality is, the more people *need* accurate and reliable results
- On the other hand, if a **complementary** feature delivers results that are not always of the highest quality, people *may* be more forgiving

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