

## Assignment 2a: Bayesian optimization (mandatory, 5p)

### Deciding a Case

**Topic.** We first choose a *topic* based on the third letter of your first name:

1. A-K: Learning a user's preferences (preference learning)
2. L-T: Optimizing a design with a designer in the loop (human-in-the-loop design)
3. U-Z: Adapting a design (human-in-the-loop adaptation)
4. Å-Ö: Wild card! Pick whichever you want.

For example, Antti would work on topic number 1.

**Case.** Next, define a *case* for your topic. The case should be a small version of a *realistic* problem in computational design. For example, Antti could work on a case where we want to adapt the way auditory feedback is given to users when a mistake is made, trying to minimize their disruptive effect while still keeping them effective.

**Task:** The goal of this part is to develop an optimizer for your case and test it with yourself, simulating different use cases.

Your report must:

- Explain the case with a photo or other illustration
- Argue why BO is a good solution to this case
- Explain the main idea of your BO implementation
- Show results (both progress and outcomes) from 3-5 use cases (hypothetical)
- Conclude: discuss what works and what does not

Grading:

- A meaningful case is chosen and demonstrated that is both user-centric and exploits the capabilities (strengths) of BO +1
- Technical implementation is correct and considers the unique aspects of the case +2
- The approach is meaningfully tested. The report shows acquisition function plots over iterations +1
- A meaningful conclusion with relevant pros and cons discussed +1