

## **Assignment 2 – Human-Computer Interaction 2**

**Note: Exercises are voluntary with the goal of preparing you for the final exam. The sample solution will be presented during the exercise sessions on Monday.**

**In this exercise we slowly get familiar with JavaScript and the Data Driven Documents (D3) library. It is highly recommended to do all exercises as they build on each other and code snippets that you already created in other exercises can be reused for new exercises. Concepts and coding skills thought in these exercises are relevant for the exam.**

### **Exercise 1: Pointing Techniques**

Which pointing techniques did we learn so far? Shortly describe each pointing technique.

### **Exercise 2: Fitts' law for area cursors**

Assume all parameters as stated in exercise 2 of assignment 1. You have a circular area cursor now with an area radius of 50px.

What is the new W? What is the new D?

What movement time can we expect following Fitts' law?

### **Exercise 3: Implementing area cursors (code snippets can be reused in coming exercises)**

Start from a minimal HTML file.

1. add an `svg` container to the html 'body' (width = 1000, height = 500) with a light grey background and a thin black border.
2. add a circular target with target width of 20px at a random position within the `svg` container. The target is white and has a black border.
3. When entering the target with the mouse, the target turns red, and when leaving the target it turns white.
4. When clicking the target with the mouse, the target disappears and reappears at another random position in the container. Make sure that targets are always completely visible on the `svg` canvas.
5. When clicking a target print the time required since the last target was clicked to the console.
6. Add an area cursor with area size of 50 pixel around your mouse cursor.
7. As soon as the area of the cursor intersects the target, the target shall turn red.
8. Add a data table containing target width, height and the measured time for each of appearing target.
9. **Theoretical question:** Imagine another circular target is just next to the previous one. What problems might you run into using an area cursor? How could you solve it?