

Assignment 10 – 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.

Concepts and coding skills taught in these exercises are relevant for the exam.

Exercise 1:

You are asked to construct a large wall display assembled by one or multiple HD projectors (1920 x 1080 pixels each) that is optimized for a specific viewing distance. Note that the human eye's resolution is in average 1' (minute of arc or 1/60 degree).

1. The wall-sized display needs to be 5.5m wide (for simplicity it's sufficient here to calculate with the screen width instead screen diagonal). Users stand in distance of 10m in front of it. How many projectors are required so that the wall-sized display has equal or higher resolution than the human eye?
2. How many projectors are required if users stand in 2m distance to the wall-sized display?
3. The wall-sized display needs to be 10m wide. Users' distance to the display in 10m.
4. What are three factors influencing the overall decision of the number of required projectors?

Exercise 2:

Explain the difference in working principle between a *Frustrated Total Internal Reflection* (FTIR) and *Diffused Illumination* (DI) table. What type of interaction can be detected by a DI table that cannot be detected by an FTIR table?