

# Exercise sheet 5

## Interactive Systems - SoSe 24

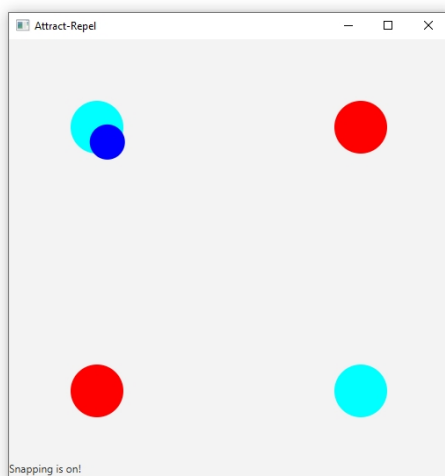
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All exercises that are not explicitly declared as group assignments must be completed individually and handed in individually. Identical submissions will be treated as plagiarism.

Submission until Monday 06.05. at 23:59 via <https://assignments.hci.uni-hannover.de/SoSe2024/ISy>. The submission must consist of a single zip file containing all necessary files. Please remove umlauts from file names.

Pack your solution (pdf file and zip file of the exported project) into a zip file for uploading.

### Task 1: Semantic Snapping (15 points)



With semantic snapping, targets ("snap sites") can attract or repel a drawn object, depending on whether the positioning is meaningful in the semantics of the application or not. Implement the following behavior using the SemanticSnap.zip template (see Stud.IP): There are attracting targets in light blue and repelling targets in red. There is also a dark blue object that moves with the mouse cursor (if it is not attracted or repelled by snapping). Symmetrical snapping (slides: "Snapping with Symmetrical Catch-Up Region") should be implemented for the attracting targets. For repelling targets, the dark blue object should not pass over the respective target, but remain at its edge. This behavior is illustrated in the video SemanticSnap.mov (see Stud.IP).

- Implement the snap method in the RepellingTarget class. The dark blue circle must not overlap with the red target.
- Implement the snap method in the AttractingTarget class. The behavior should be as illustrated in the video (symmetrical snapping). If the dark blue circle (1) and the light blue circle (2) do not overlap, (1) remains centered on the position of the mouse cursor. If the mouse cursor is inside (2), (1) is centered in (2). Otherwise, the symmetrical run-ahead or catch-up region is active.

- c) Implement the switching on and off of snapping. This should be possible by pressing the s button. The status should be displayed in a label. Use bindings for this.

Note: It is helpful to use the methods of the Point2D class (e.g. distance, add, subtract, multiply, normalize).

## **Task 2:            Pointing Techniques - BubbleCursor (8 points)**

The BubbleCursor was discussed in the lecture. Further information can be found in the following paper.

Tovi Grossman and Ravin Balakrishnan. 2005. The Bubble Cursor: Enhancing target acquisition by dynamic resizing of the cursor's activation area. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI 05). ACM, New York, NY, USA, 281-290.

<http://www.tovigrossman.com/BubbleCursor/>

- a) Describe a scenario for which the bubble cursor is particularly suitable. Briefly explain why this is the case.
- b) Describe a scenario for which the bubble cursor is less suitable. Briefly explain why this is the case.