

OBJECT SELECTION IN AUGMENTED REALITY

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Motivation

Augmented reality provides better and faster methods for executing complex industrial tasks on mobile devices. However, most conventional object selection methods are ineffective for this purpose.

Goal

Find a better method for selecting objects in occluded environments for tablet-like devices.

Experiment

We proposed two new methods for object selection and created a testing application. The third method was set to be Direct Touch.

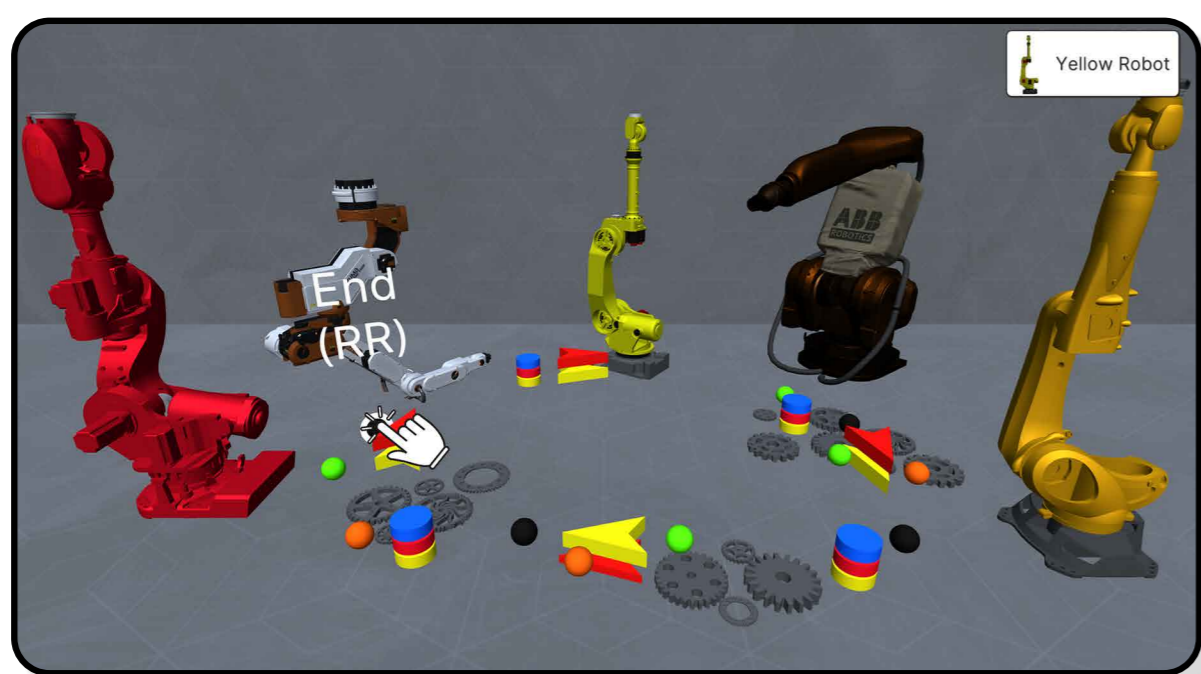


Figure 1: Direct Touch

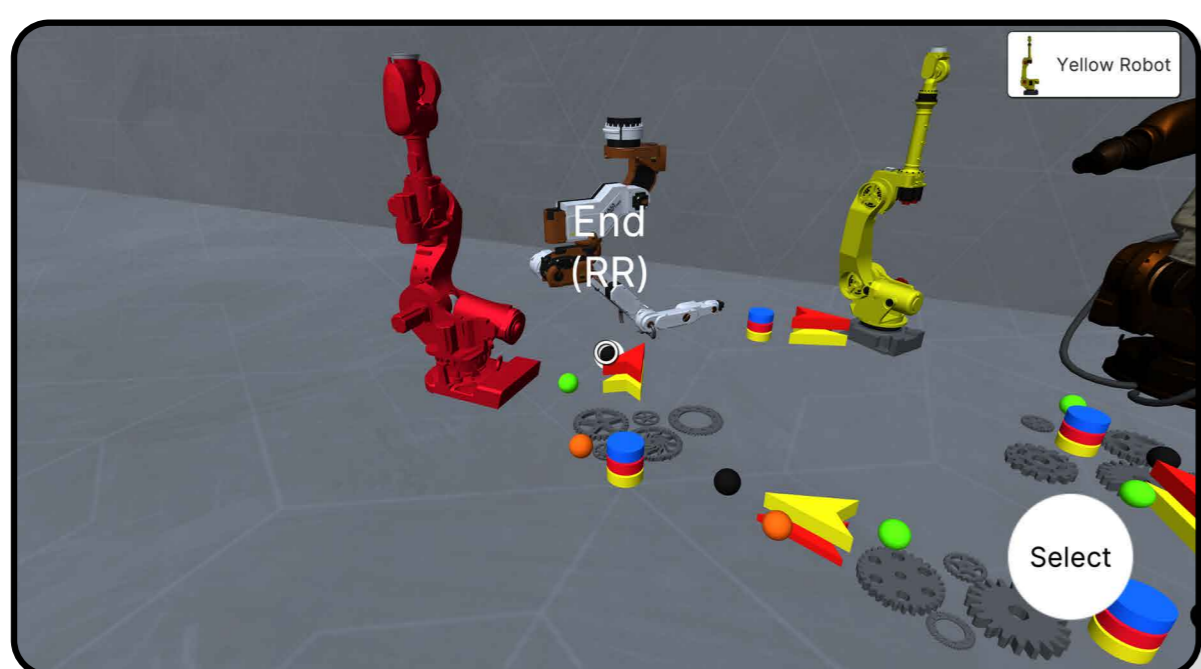


Figure 2: Cursor

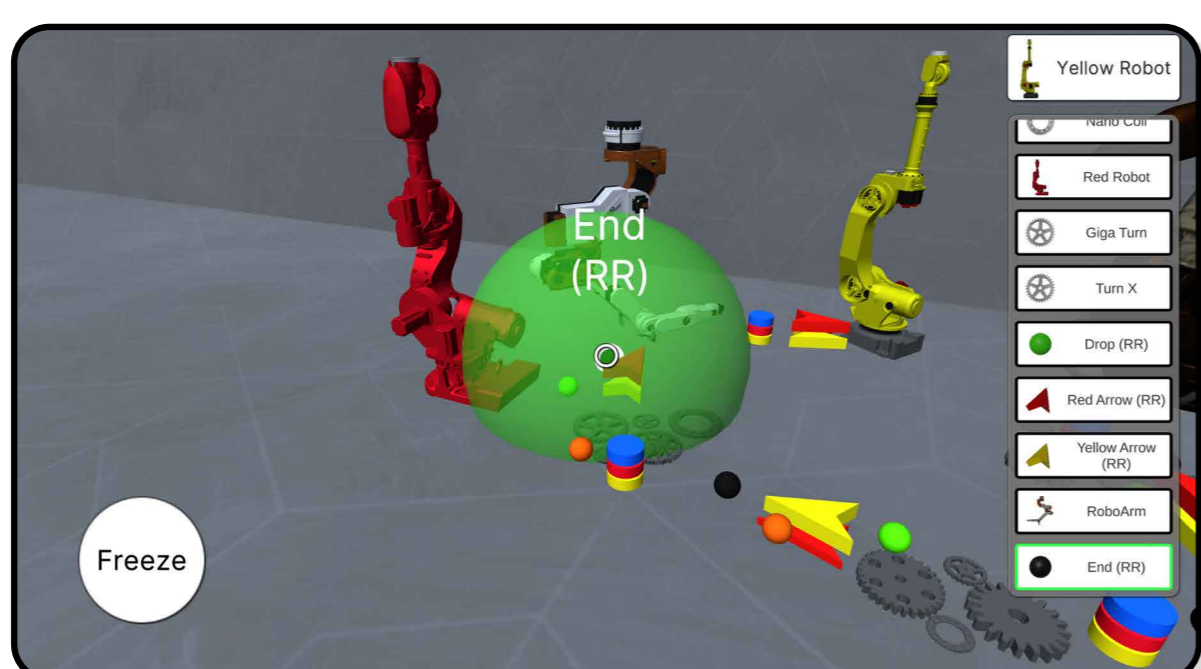


Figure 3: List

The experiment consisted of three runs, one with each method in random order. Sixteen volunteers have participated. They had to pick all 54 objects in order, which was signaled by a white outline.

Results

At the end of the experiment, respondents were asked to order methods based on which one they liked best.

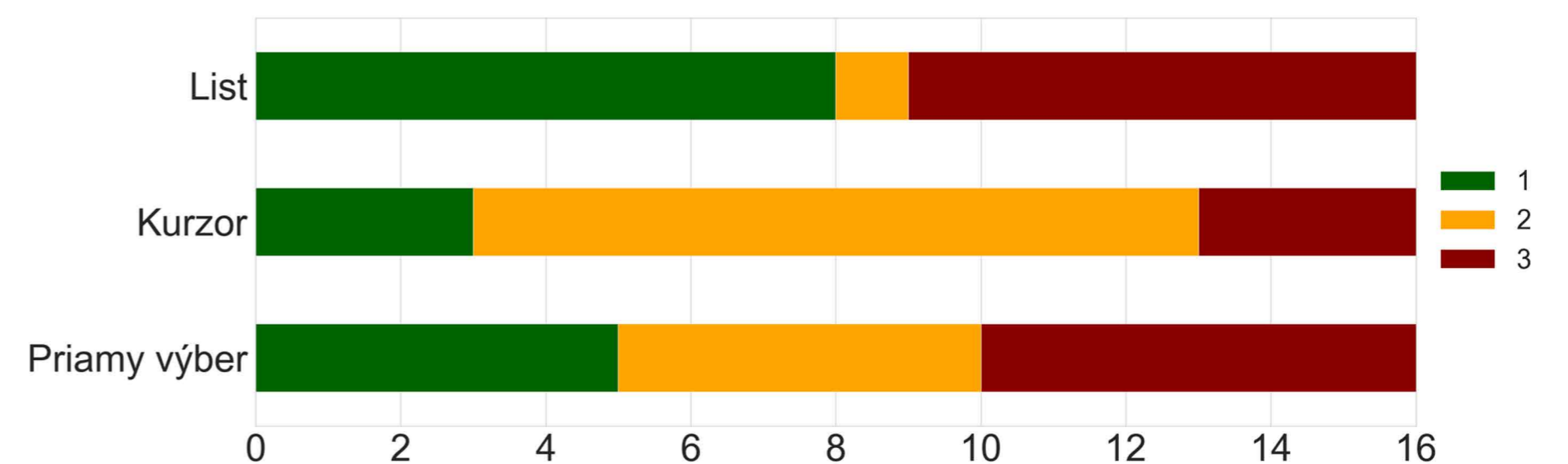


Figure 4: Preference
1 - Most liked 2 - Second most liked 3 - Least liked

The test application was set to capture data for precision, run time, and more.

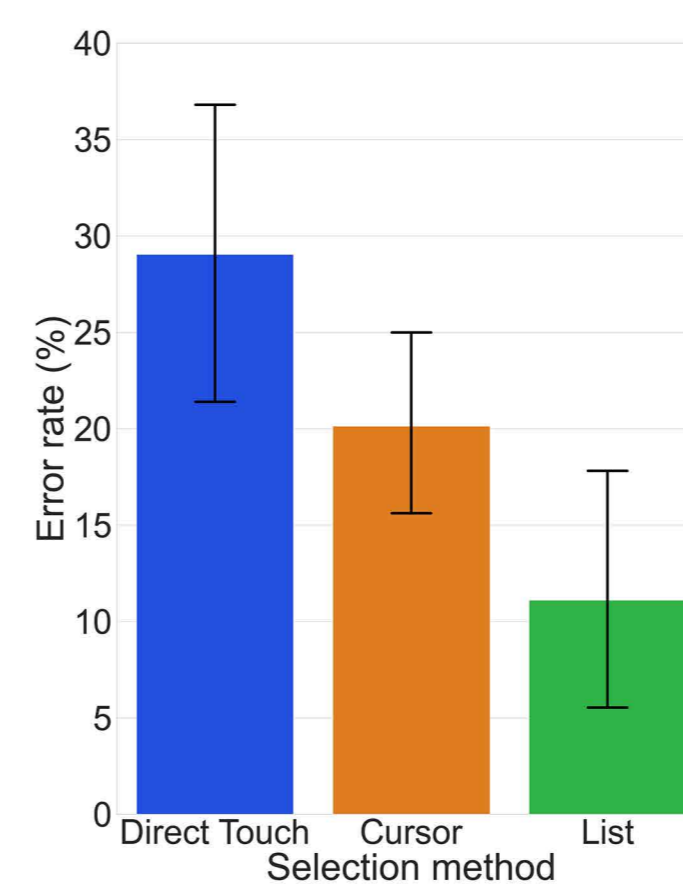


Figure 5: Error rate

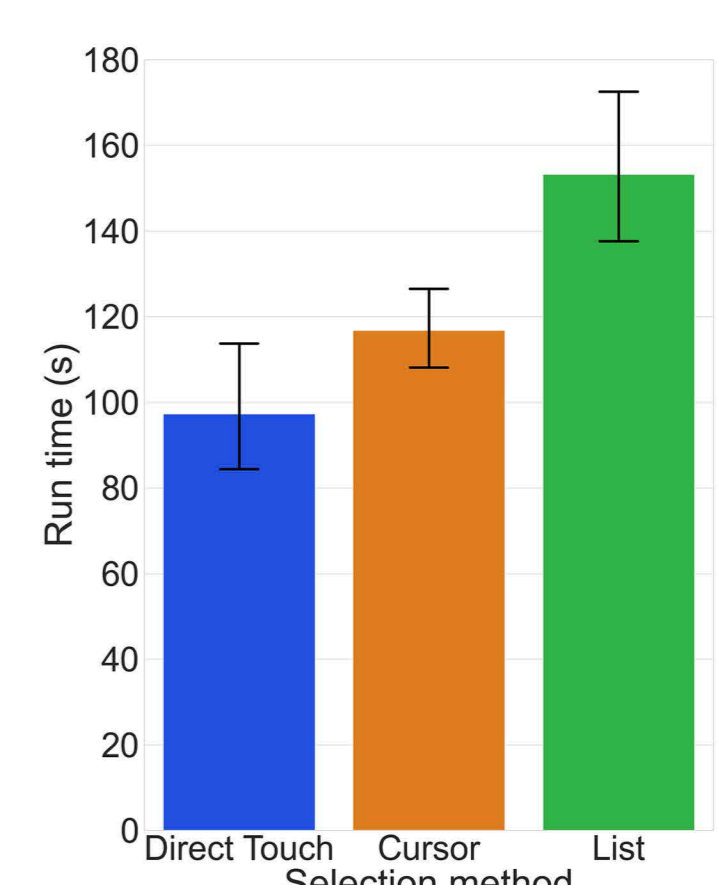


Figure 6: Run time

Objects were classified based on their size. To provide better insight into accuracy.

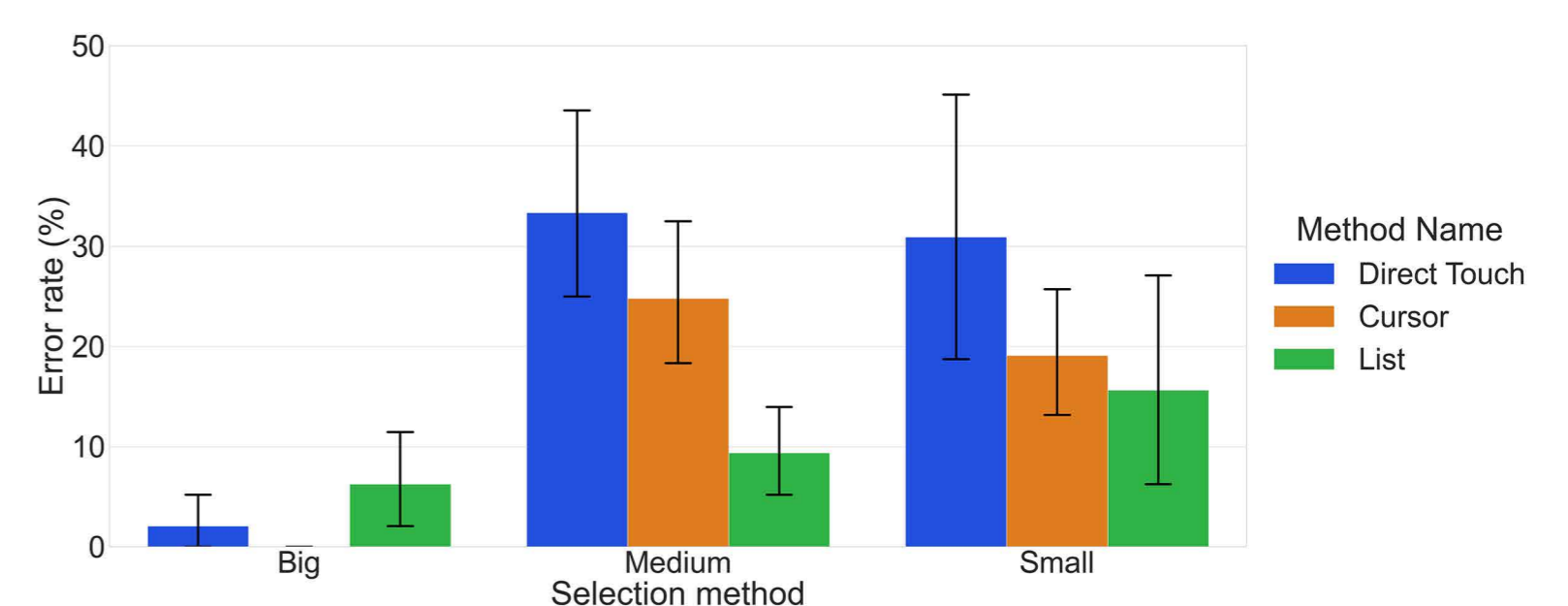


Figure 7: Error size relation

Usage of freeze functionality with relation to precision.

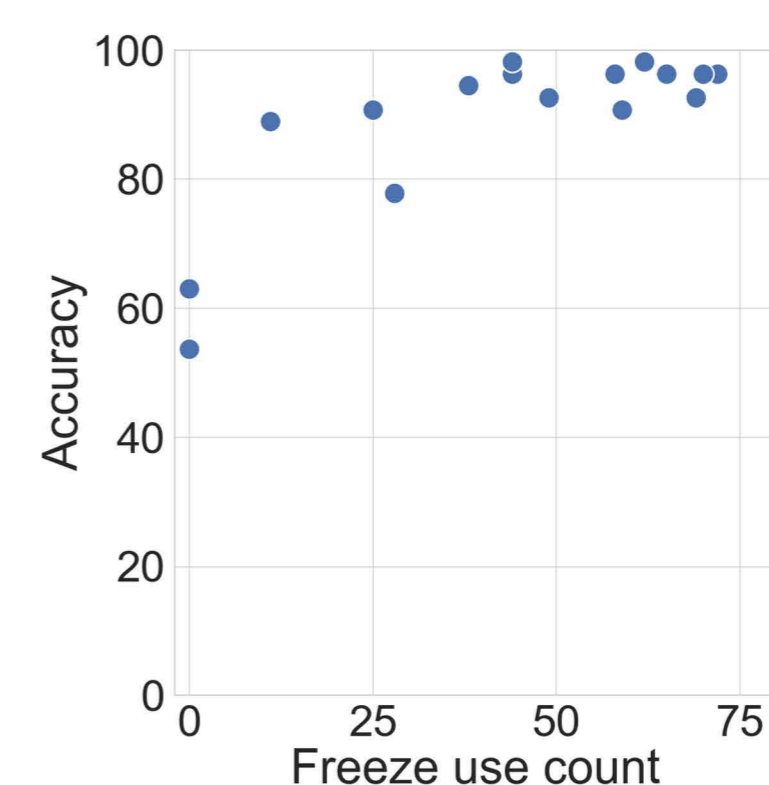


Figure 8: Freeze accuracy relation