

Predicting Human Performance using Fitts' Law

Submission Format

Group members:

Note: Enter in the format, "Last name, first name (matriculation no.); Last name, first name (matriculation no.); ..."

1. a.

Distance from **S** to **F**, D_{SF} : 25 cm

Target Width for **S** to **F**, W_{SF} : 5 cm

Distance from **F** to **C**, D_{FC} : 32 cm

Target Width for **F** to **C**, W_{FC} : 8 cm

Movement Time for **S** to **F**, MT_{SF} : 258.49625007211563 ms

$$(= 0 + 100 * \log_2(25.0/5.0 + 1) = 258.49625007211563 \text{ ms})$$

Movement Time for **F** to **C**, MT_{FC} : 232.19280948873623 ms

$$(= 0 + 100 * \log_2(32.0/8.0 + 1) = 232.19280948873623 \text{ ms})$$

Movement Time for **S** to **C**, MT_{SC} : 490.6890595608519 ms

$$(= 258.49625007211563 + 232.19280948873623 = 490.6890595608519 \text{ ms})$$

b. Using fingers (b) instead of mouse (a) causes the movement time to

☐ Increase

☒ Decrease

2.

Sketch of your redesign:



How your redesign minimizes the selection time:

The buttons are ordered in the toolbox that is closer to a square form, compared to the original (that is in rectangular form). The square form reduces the time required to access the buttons (especially edge cases) drastically. In previous rectangular form that is longer in height, accessing to the buttons that are on the upper side of the toolbox was higher, or on the bottom side, based on where the cursor is. Still, wherever the cursor is, it does not help being longer in the height (neither in the width, for that matter). All in all, square-like form of ours, compared to original one, cuts down the average time required to access buttons drastically.

Although two bottom buttons might look strange as they're in the middle. It is a better solution than putting them in the corner due to the fits law (it is faster to catch those buttons from far corners). Furthermore, we're putting a whole group of buttons in the left top corner. Regarding to Fitts Law, the width of at least one button (top left corner) is always infinitive - we can put in this place the most frequently clickable button. We've also decided to group all buttons in one panel instead of splitting them all over the screen, because it's faster to switch between buttons in this case.

3.

Argument #1:

Oliver's design is faster because buttons are stucked together in one group. The distance between all corner buttons is shorter. In Krishna's approach the distance between buttons is bigger. That leads to significantly longer selection time.

Argument #2:

The disadvantage of Oliver's design is that it's easier to missclick a button you want to choose, due to the lack of padding/margins between buttons. The solution for this problem is in Krishna's design. On his design the buttons are divided clearly, so you can distinguish buttons easily. Furthermore, in case of missing a button it is very likely that you'll click a blank space (nothing happens). While in Oliver's tool palette missclick will lead to running of undesirable program function. That's why every missclick influences overall selection time in a bad way.