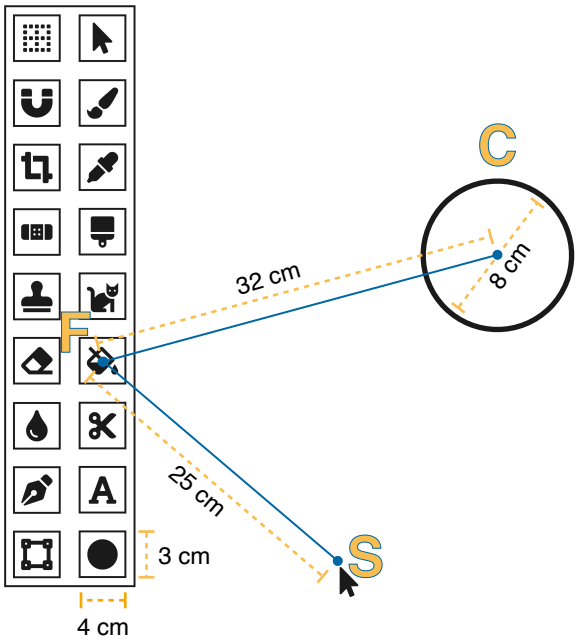
Predicting Human Performance

Lab: Monday October 19

Task 1

Consider the following scenario in which a user wants to fill a circle using a graphics design tool.



1. The mouse cursor begins at the starting position (**S**)
2. The user moves the cursor to the *Fill Tool* icon (**F**) and clicks it
3. The user then moves the cursor inside the circle (**C**) and clicks to fill the circle

- Each button in the tool palette is 4 cm wide and 3 cm high
- Assume that the movement axis from S to F passes through the diagonal of the fill button

a) Calculate the movement time *MT* for this task by using **Shannon's formulation** of Fitts' law for a computer mouse with the parameters a = 0 ms and b = 100 ms/bit

b) Argue, whether the movement time decreases or increases if the user uses their fingers (finger parameters: a = 100ms and b = 50 ms/bit) instead of a mouse using **Shannon's formulation** of Fitts' law without recalculating the exact movement time

Task 2

Redesign the tool palette from Task 1 with the following requirements

- The average selection time for every tool in the tool palette would be minimal considering Fitts' law
- The mouse cursor starts at the center of the screen
- You cannot change the number of tools in the palette or the shape, orientation, or size of each button

a) Provide a sketch of your redesign

b) Provide arguments why your design meets the given requirement of a minimal average selection time

Task 3

An application allows users to move drawings around pixel-wisely by using the arrow keys. A user wants to move a drawing upwards by 100px using the *Up* arrow key. For this, they click the key as fast as possible. After a while, they overshoot their goal by 10 pixel.

a) Argue what processors of the CMN model are involved during the described movement process and how they are involved. The user starts with their finger on the *Up* arrow key

b) Argue whether the user in the given scenario is acting in a closed or open loop