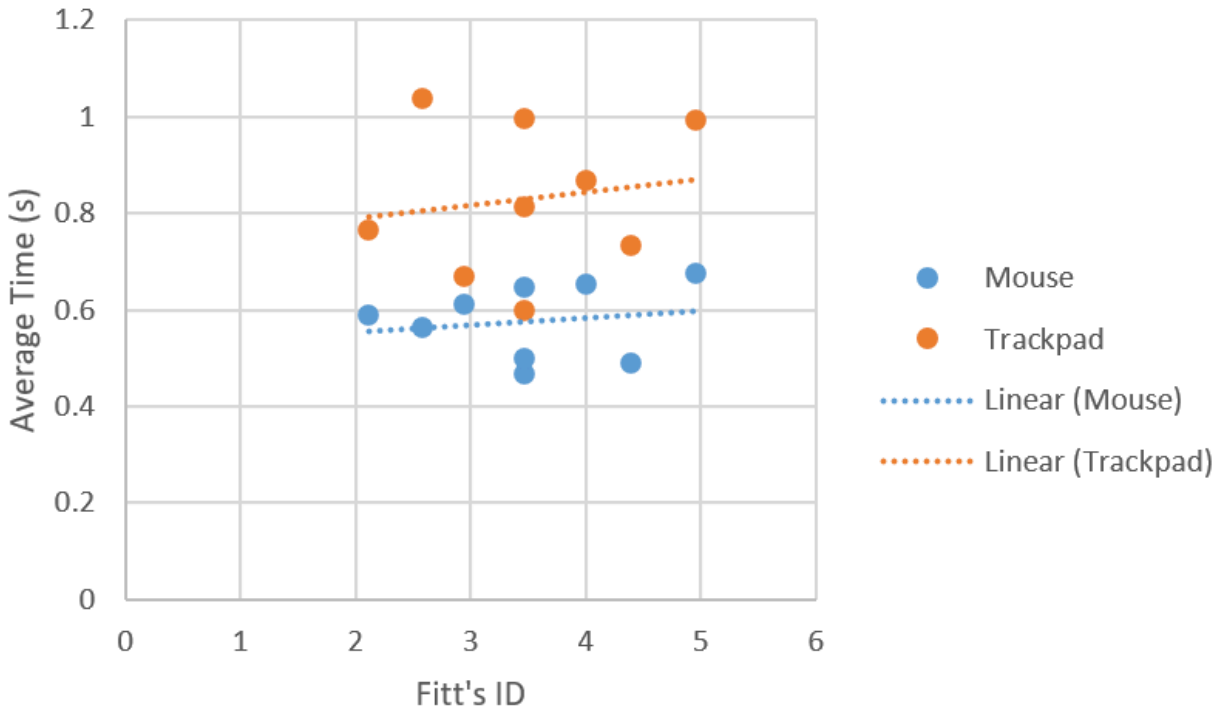
Fitt's Law Analysis

Roarke DeCrewe | Cosc 341 | 2024-07-29

This report details the analysis of the completed Fitts Law Selection done with our program using the two input methods of Mouse and Trackpad.
The primary source of our findings can be found below in our Fitts Law Graph below.



The initial look at our raw data gives two main insights, without analyzing the graph itself. First, on average, the trackpad was ~0.25s slower in hitting a target during our tests, with the difference ranging from a minimum difference with participant 3, with a difference of ~0.15s and a maximum difference of ~0.37s with Participant 3. Irregardless of the Participant, trackpads were consistently slower. Biases that may have affected this mainly are due to subject selection, as the three subjects used (friends of mine) are mainly Desktop PC users who are unfamiliar with a trackpad, thus leading to a certain lack of ability while using them.

Our second main insight has to do with the amount of misses with both mice and touchpads. This insight is more uncertain in what it was telling us, as Participant 2 and 3 made more mistakes with the touchpad compared to the mouse (8 more and 11 more respectively). However, participant 1 made more mistakes with the mouse (2 more) compared to the touchpad. I believe this variable was not controlled properly during the testing, as a standard sensitivity

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was not set among the participants and even within trials the trackpad vs mouse sensitivity were different, thus it is difficult to pull any proper analyses from this data, although it leads to further interesting inquiry regarding how the input method affects this data.

For the proper throughput analysis of the graph, our throughput for our two methods are found below.

$$Mouse\colon TP = \frac{ID}{MT} = \frac{3.484871974}{0.574985536} = 6.061$$

$$Touchpad\colon TP = \frac{ID}{MT} = \frac{3.484871974}{0.8287217921} = 4.205$$

From this, we can determine that compared to the Trackpad, the Mouse is 1.44x times better, matching with the data pulled from our average target hitting time. This overall supports my initial hypothesis that the mouse (my preferred device) is superior to a trackpad, due to its more precise nature of targeting.

Regarding the actual development of the project, the build in Unity was rather easy compared to the 2D platformer. The more clinical scope limited my ability to be creative compared to my first assignment, but also made my development time much faster in comparison. The hardest part of development was setting up a proper method of switching between distance and width values for the data collection. As my other 2 participants live with me, I didn't have to fully package the game for output to send, thus all the participants worked on my PC and laptop, meaning that a compiled version was not created prior to submission. Thus, simply using the Enums added in the video tutorial and switching the scene depending on their values, which worked well.

Working alone again was similar to my previous project, as I work best by myself, I was easily able to get the project done quickly and do my analysis quickly despite mounting coursework on other classes.