CS449 Mini Assignment-2 Fitts' Law

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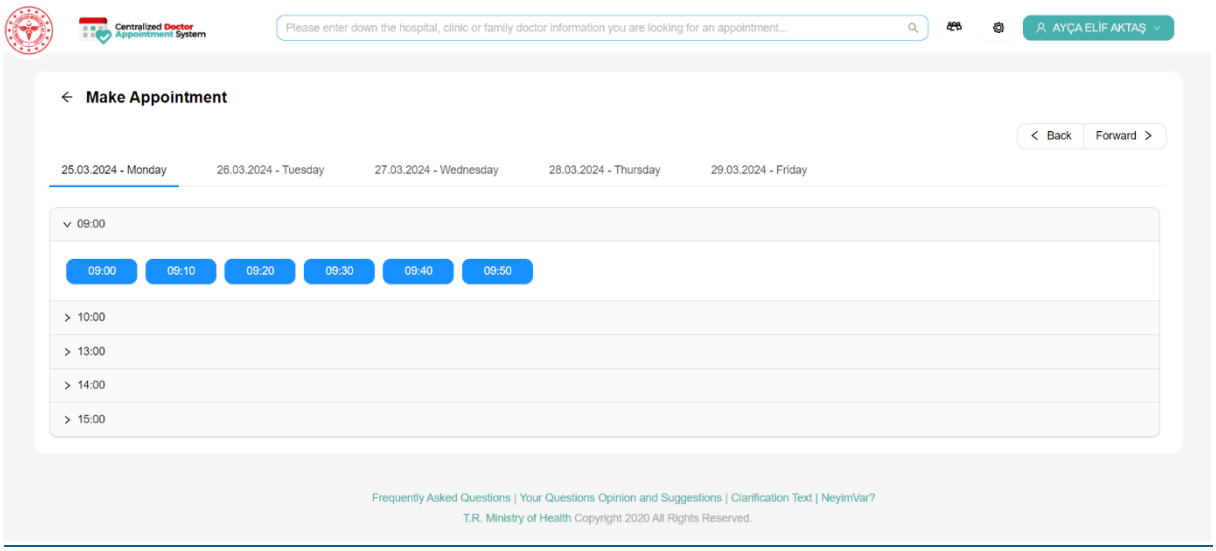
The application of my choosing is "Merkezi Hekim Randevu Sistemi" (Centralized Doctor Appointment System) designed by Turkish government for its citizens to be able to Schedule a meeting from any doctor at any hospital in easy way. The subservice that I wanted examine at this website is the scheduling of an appointment with a doctor using the system. The user must navigate through the interface to select a suitable time slot for the doctor of their choosing. Here is the screenshot and the link to the application of my choosing:

https://mhrs.gov.tr/vatandas/#/Randevu



The appointment system's navigation and selection process present a Fitts' Law-related design challenge. According to Yablonski, "The time it takes for users to move to and engage with an interactive object is a critical metric. It's important that designers size and position interactive objects appropriately to ensure they are easily selectable and meet user expectations with regard to the selectable region—a challenge compounded by the differing precision of the range of input methods available today (mouse, finger, etc.)" (Yablonski ,2020, p.13). In order to achieve this challange Fitts' Law calculates how long it will take to move quickly toward a target region, like a button or control, based on the ratio of the target's width to its distance. In simpler terms, as an object's size increases, the time required to choose it decreases. Furthermore, the time required to select an object decreases as the distance traveled by the user decreases. It also works the other way around: it takes longer to choose an object correctly the smaller and farther away it is. Yablonski states that, "There are three key considerations that we can derive from Fitts's law. First, touch targets should be large enough that users can easily discern them and accurately select them. Second, touch targets should have ample space between them. Last, touch targets should be placed in areas of an interface that allow them to be easily acquired"(Yablonski ,2020, p.15).

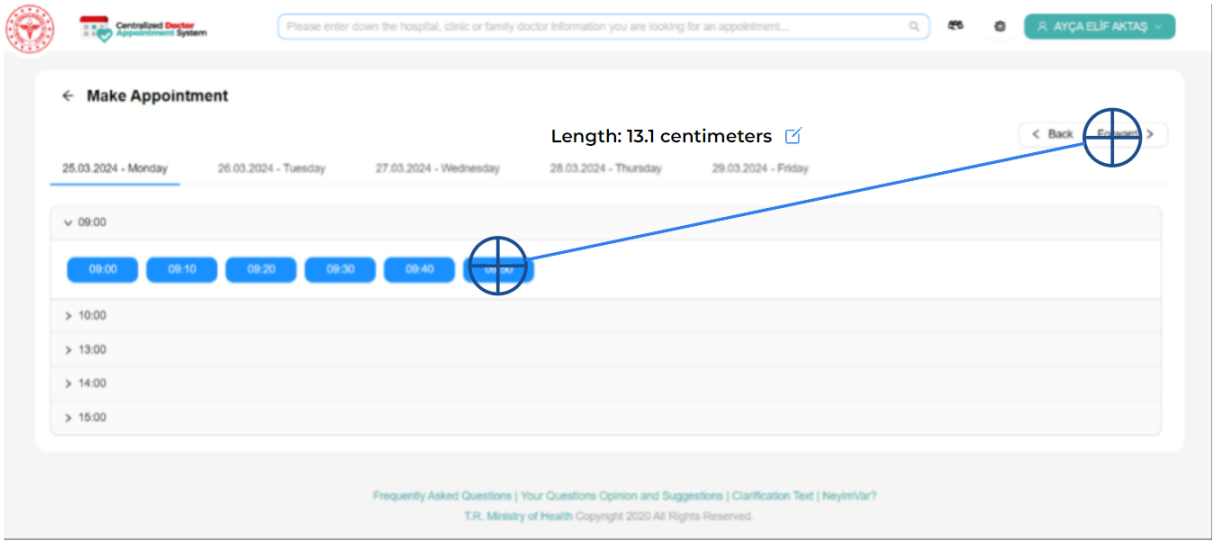
In this application all three key ideas of Fitt's law is violated. The 'Forward' button is too far away from the chosen time slots and not instantly visible, which is essential for the user to move forward with scheduling an appointment. Furthermore, the visual qualities of the targets

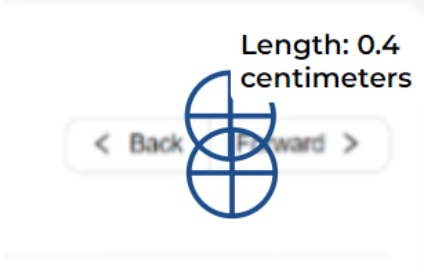
(buttons), particularly their color and proportions, hinder instant visibility and recognition, preventing effective interaction between the user and the system. Furthermore, the adjacency of the 'Forward' and 'Back' buttons(targets) violates a major idea of Fitts' Law that we stated before, which states that target spacing should enhance ease of selection and limit the possibility of selection errors, thus optimizing the user interface for speedy navigation.This arrangements probably makes it take longer for a user to click the button(target), which will negatively affect how user-friendly the system is overall.

Yablonski states that, “American psychologist Paul Fitts predicted that the time required to rapidly move to a target area is a function of the ratio between the distance to the target and the width of the target. Fitts also proposed an index of difficulty metric to quantify the difficulty of a target selection task in which the distance to the center of the target (D) is like a signal and the tolerance or width of the target (W) is like noise”(Yablonski ,2020, p.14-15).

To calculate the Difficulty Index (DI) of the design problem using Fitts' Law, we would use the following equation: **DI = log2(2D/W)** Where:

- D is the distance from the starting point to the center of the target.
- W is the width of the target.



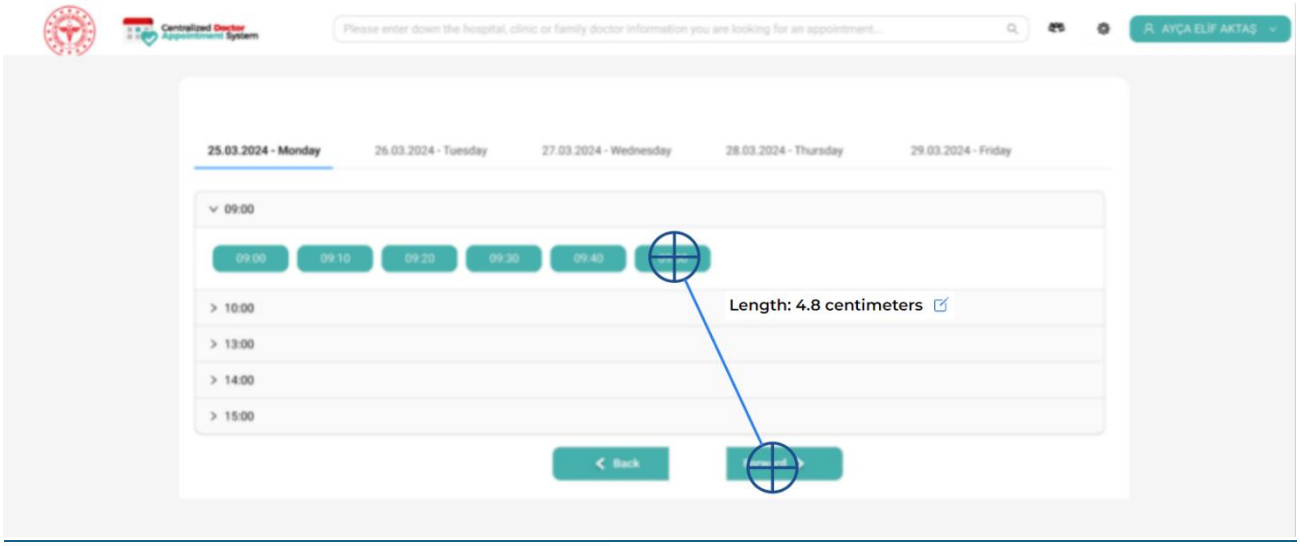


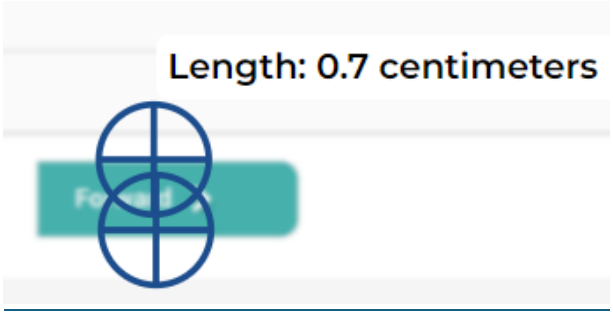
DI= log2(2(13,5)/0.4)
=log2(65,5)

=**6,03**

My proposed solution is to alter the 'Forward' and 'Back' buttons (targets) to make them more visible by changing their color and making them wider. Additionally, eliminating white space and positioning the targets centrally below the time slots reduces the cursor's travel distance. Also, I separated the 'Forward' and 'Back' buttons so that they would be consistent with Fitt's laws. This redesign should, ideally, lower the DI because both the distance (D) and the width

of the target (W) have been optimized—distance is reduced while target width is increased, making it faster and easier for the user to choose the buttons.





DI= log2(2(4,8)/0.7)
=log2(13,7)

=**3,77**

As can be seen by Difficulty Index (DI) being lowered at the redesign supports my claim that this model would perform better.

Here is the Figma link to my proposed solution:

https://www.figma.com/file/o9xPCfnwWYNVb9v1ssuVUZ/Untitled?type=design&node-id=0%3A1&mode=design&t=g71nTXtUsSWsH78D-1

References

Yablonski, J. (2020*). Laws of UX: using psychology to design better products & services (First edition.)*. O'Reilly.