CS-639 Building User Interfaces, Fall 2019, Professor Mutlu

Assignments — Week 11 | Design | Designing for Accessibility

In this assignment, we will explore some of the concepts we learned about in class around *accessibility*. Specifically, we will try to better understand how accessible design and assistive technologies are implemented in existing mobile platforms and design accessibility features for our Module 2 deliverable fitness app. You will choose a mobile platform and analyze its accessibility features and build on this understanding to specify similar features for your app. You may have to do some online research map impairments to design requirements, as how the accessibility features on the mobile platform work in different situations may not be clear. The premise of the assignment to think about how accessibility features work at the lower level and how we might implement them in our designs, so your focus should be on the mappings between impairments and accessible design features. You can be creative with your designs, but they should also be feasible (e.g., enlarging buttons is feasible, but predicting calories from a photo is not).

Part 1. Discovery. In this part of the assignment, you will discover the accessibility features of mobile platforms. You will choose (1) *a mobile platform*, such as a mobile device or a tablet computer, running running iOS, Android, or an alternative operating system and (2) *an existing app* from any domain (e.g., fitness, weather, social media, news). Analyze the accessibility features in the general settings of the device to choose one from each of (a) *vision*, (b) *physical/motor*, and (c) *hearing* assistive technologies. Define a core task for the app (e.g., entering food into a fitness app, adding a new city into the weather app, posting on social media, or adding a new news feed) and perform the task a total of four times, first with all accessibility features disabled and then by enabling them one by one. Analyze how the app behaves differently with each assistive technology and describe the changes you noticed either in narrative form, dedicating one paragraph for each assistive technology, or using annotated screenshots. Pay particular attention to (1) any changes in how the components appear and behave and (2) the addition of other components, elements, or behaviors.

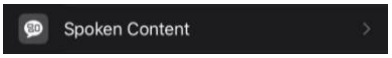
Platform: iOS
Task: get current weather

With no assistive technologies

Normally, if the user do not have any impairments, he will get the weather using the "Weather" app, by press the "Weather" app button and he will see the current weather.

Vision

Spoken Content



Now, turn on the spoken Content and press the play button or swipe down the screen from top with two fingers, the device will read the all contents on the screen. The gesture design is friendly to the people who has low vision or blindness.

Physical and Motor

Touch – Assistive touch

Next, turn on the assistive touch. User do not have to press the physical home button but press the virtual home button icon to start Siri. In this case, the user only has to speak to get the current weather, and this is friendly to the users with physical impairment.

Hearing

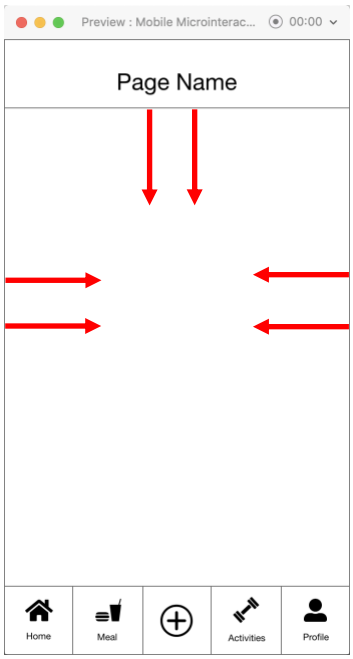
Subtitles & Captioning

Finally, turn on the Subtitles & Captioning. This may not helpful for the users with hearing impairments in this case. However, can be helpful for such users watch a video.

Part 2. Design. In this part of the assignment, you will build on your understanding of how assistive technologies work from Part 1 to practice accessible design for your fitness app. You will choose one *permanent impairment* and one *situational impairment* that you would like to target with your app. Determine the design requirements (what should the app do or not do to offer users with these impairments a similar experience) for each impairment using one or a combination of the following: (1) your observations of how assistive technologies worked in Part 1; (2) quick-and-dirty online research you can do about the effects of these impairments on mobile device use; and (3) novel ways in which you can think of addressing the impairments. Choose a task that your app will support and prepare wireframe screenshots (1–3 screens, depending on the task) of your app, demonstrating the task. Create two additional versions of the screenshots that implement accessible design features for the impairments. Annotate these versions to highlight and describe the features.

Impairments: Permanent Impairment in vision

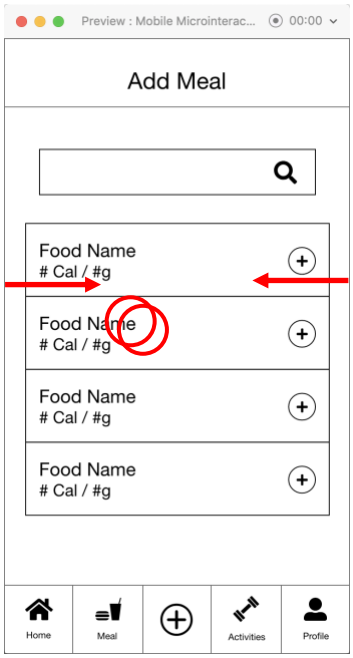
Task: Add meals



In my design, I am going to design the way for a blind person to add a meal.

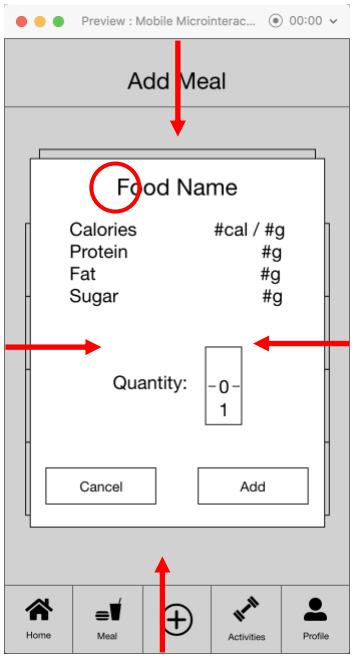
When the phone is in "read" mode, and the user enter the app, the phone will read following:

"This is home. Swipe down with two fingers to get your summary, swipe left with two fingers to add an activity, swipe right with two fingers to add a meal"



When the user swiped right, the phone will read following:

"This is adding meal. Double tap the screen to add a food, swipe left with one finger to cancel and go back to home, swipe right with one finger to finish the meal and go back to home"



When the user double tapped, the phone will read the following:

"Add food. Tap the screen to speak the name of the food, swipe up with one finger to increase the amount of serving, swipe down with one finger the decrease the serving, swipe left with one finger to cancel add the food, swipe right to add the food"

When the user says the name of the food, increase or decrease the amount of serving, the phone will repeat everything:

e.g. "Add food. Bread, serving one, 150 calories, protein 15 grams, fat 2 grams, sugar 40 grams."