Voice controlled devices are becoming increasingly popular, like the personal assistant “Google Home” or the “Despacito” playing device “Alexa”. As with every form of human-AI interaction, voice UX designers make intrinsic ethical judgements in each of their design choices. In this assignment, you will establish a set of ethical values for assessing interfaces before creating two models: one that aligns with these values with and one that operates against them. For the ethically conscious model, you will create a prototype using Actions on Google with Dialog Flow. For the unethical model, you will create a video demonstrating how users could be harmed by your design choices.

Part 1: What is a Good Interface?

In class, we’ve talked about designing interfaces and interactions that are conscious of a user’s expectation based on the given context. Tradeoffs occur when one design choice is made over another. In these cases, designers operate in a grey area without a clearly correct option. As such, the designer, whether consciously or not, turns to their values in order to decide. Since there is often not a right answer in these gray areas, it’s a useful skill to be able to evaluate the pros and cons of a decision and justify which is the right one.

The Scenario

For this part of the assignment, you will be improving a grocery store phone application so that it is easier to use for senior citizens. Your company has identified a set of values that all interface designers and programmers should take into account when designing for their users, who in this case, are senior citizens. For this interface, two relevant values of the set your company has identified are transparency and convenience. These values become a tradeoff when prioritizing one conflicts with the other—i.e., making a more transparent service results in it being less convenient. You’re in charge of the team that allows users to browse through your app and add items that they like to the cart.

Your team has identified a few problems that should be addressed. We’ve provided a few of these interface problems below that have many solutions, based on what you prioritize between transparency and convenience.
- Improving advertising relevance and revenue
- Showing users more relevant products to purchase
- Encouraging users to buy things that are on sale
- Informing users about how long an item that is in their cart will last
- Notifying users about remaining inventory stock
- Level of detail (specificity) and clarity in product descriptions

Pick one of the problems listed above to answer the following questions:
1. **Describe the problem and explain the importance of both values (transparency and convenience) in the context of this question.** (1-2 paragraphs)
2. **Between transparency and convenience, pick the value that you think is more important in this interface problem. Justify why you prioritize this value.** In your justification, think about how focusing on this value affects the people directly affected by your interface, the people indirectly affected, and the people who will never come in contact with your interface! **Keep in mind that there are no right or wrong answers here.** We just want to see that you can critically think about your values and how they interact with the people your interface affect, but **the value that you choose to prioritize here will be used in part 2!** (1-2 paragraphs)

**Part 2: Designing Input for Voice Interaction**

As voice interaction devices are becoming increasingly popular, it’s important that people involved with UI/UX are familiar with designing and prototyping this new form of input. Imagine you are a UX designer for an existing interaction device that utilizes voice interaction (Google Translate, Siri, Smart TVs, Cars, Cortana, Google Home, etc.).

1. **Pick an existing interface that utilizes voice interaction.** This interface doesn’t need to be something that you have access to and can physically interact with, though it might be helpful to have had experience playing around with the interface you pick. Feel free to use one of the examples in the paragraph above.

2. **Come up with and describe an interface problem** for your voice interaction device. Keep in mind that **this problem needs to pivot around transparency AND convenience, and should not have a clear solution.** This means that a possible solution could be to focus entirely on transparency, and ignore convenience as a factor, whereas another solution could be to focus entirely on convenience and ignore transparency.

3. **Design an interaction model** that solves the problem that you described above. The interaction model should prioritize the value that you prioritized in part 1, so if you prioritized transparency over convenience, this mode should also prioritize transparency over convenience, without making the interface difficult to use or hard to learn. For this interaction model:
Create a state model for this interaction model. A state model is a diagram that comprehensively describes the behavior of an input device: the possible device states and the transitions between them. The example on the right is a state diagram of basic mouse input. Tracking and dragging are states; button up and button down are transitions. See the Buxton Input reading and Pointing lecture notes for more examples. Both physical and digital devices can have state models.

Create this interaction using Actions on Google. You will be using Google Assistant’s Developer Platform and editing it in Dialogflow. We’ve created a document to help you get started with Dialogflow but you’re encouraged to also learn it on your own through their documentation. This platform is used by companies to extend the services of their interface to be accessible through Google Assistant devices, but for the purpose of this assignment, we will be using this interface to build the state model from the previous step (step 2) and then test it in step 4. You can enhance your app by coding more advanced functionality in Dialogflow, but this is optional. You should be able to translate your task to Actions on Google without any coding.

When you are done creating your prototype, go to the settings and share it with the email cs130.input@gmail.com. The TAs will be grading your shared prototype.

4. Like many design choices, there isn’t always a right or wrong answer. Good solutions to problems that pivot around values such as transparency and convenience reflect the priorities of the designers. However, an otherwise good solution becomes problematic when designers prioritize their values so much that other values are sacrificed.

Design another interaction model that poorly solves the problem you described for step 2. This interaction model should be a bad solution to the problem by prioritizing the value that you picked in part 1 so much that it infringes on the other value presented in part 1.

Keep in mind that this doesn’t just mean to build a bad interaction model. We want you to see the tradeoffs of prioritizing one value over another, and how going too overboard with one value begins to result in lower quality interfaces. For this semester interaction model:

Create a state model for this interaction model.

Explain how this interaction model reflects the value that you picked in part 1. What are the benefits of enforcing this value to this level?
Explain the tradeoffs that this interaction model sacrifices for focusing on the value that you picked in part 1, if any. Are these tradeoffs that you've sacrificed worth the benefit of prioritizing this value?

Create a 1-3 minute video demonstrating this interaction model. The video should be an example of the user interacting with the interaction model. It doesn’t need to be a real user, but try to capture the reactions that you expect users to have while interacting with this model. A viewer should be able to build the interaction model you've submitted by just watching the video.

Don't worry about this video being too professional. Using a phone to record is completely fine! The IT Service Center also rents out cameras for free. Most importantly, be creative!

(Optional) Intermediate Step

The Intermediate Step for this assignment is to complete all of “Part 1: What is a Good Interface?”. If you choose to complete the Intermediate Step, please submit Part 1 as a PDF to the Gradescope assignment “CS 0130 Input (Intermediate)” by Thursday, November 21, 2019 at 6:00pm.

Rubric (22 pts)

Part 1 - What is a Good Interface? (3 pts)
- 1 point - Describes the problem well and clearly explains the importance of each value in the problem.
- 2 pts - Picks a value to prioritize and justifies their reasons for prioritizing the value. The justification provided should reflect your personal views and substantially describe why this value is more important than the other value in this problem.

Part 2 - Designing Input for Voice Interaction (17 pts)
- 2 pts - Picks an interface problem that pivots around transparency and convenience. Solutions to this problem should involve tradeoffs between transparency and convenience.
- 7 pts - Designs a good interaction model
  - 4 pts - Comprehensive state model representing the voice interface's possible actions and state, including idle and error states. A viewer should be able to walk through your interface to complete the task and know what would happen if they make a mistake or the interface misinterprets their command.
  - 3 pts - Translating your state model onto the Google Assistant Developer.
- 8 pts - Designs a bad interaction model
  - 3 pts - Comprehensive state model representing the voice interface's possible actions and state, including idle and error states. A TA should be able to walk
through your interface to complete the task and know what would happen if they make a mistake or the interface misinterprets their command.

○ 1 pt - Explains how this interaction model reflects the value prioritized in part 1
○ 1 pt - Explains the tradeoffs that this interaction model makes.
○ 3 pt - Video recording that demonstrates how this interaction model works

2 pts - Style pts
○ Is this the quality of a portfolio piece? Would a stranger see this, understand it, and get something out of it? Check out the style guide for more details.