CS-571 Building User Interfaces, Fall 2021, Professor Yuhang Zhao

Dialogflow α (3 Points)

Experience Prototyping Conversational Interactions

In this assignment, you will start your work toward designing and developing your Dialogflow deliverable. We discussed in class that designing conversational interfaces has unique challenges and that ideation and prototyping methods that work very well in other design problems do not work well here. The good news is that we are also subject matter experts in conversation, but the bad news is that our expertise is encoded in our brains and is not readily available for us to use, what we called *tacit knowledge*. This is where *experience prototyping* comes into the picture: by simulating the social and/or the physical setting for the interaction and acting out the interactions using methods such as *bodystorming*, we unlock our expert knowledge and apply it to the design problem.

In this assignment, you will engage in experience prototyping for a *conversational shopping assistant*, which will serve as the basis for developing the intents and entities for the first prototype of your Dialogflow implementation. Specifically, the Dialogflow β tasks provided below should inform the development of the scenarios in Part 1, and the bodystorming of these tasks in Part 1 should be the basis for the specification of the intents, entities, and responses in Part 2.

Part 1. Experience Prototyping (1.5 Points). The first part of the assignment will involve engaging in *bodystorming* to generate ideas and specifications for your shopping assistant.

Part 2. Agent Specification (1.5 points). In the second part of the assignment, you will build on the outcome of your experience prototyping activity to develop specifications for the agent you will build in Dialogflow.

Submission Details

You will submit a completed version of this document in PDF format to Canvas.

Part 1. Experience Prototyping (1.5 Points). In this step, you will follow a process very similar to the process we followed for the in-class activity on experience prototyping, paying particular attention to *bodystorming* for idea generation. In the context of designing a shopping assistant robot, follow the steps below:

1. *Define context* — This is given to you: users interacting with a conversational shopping assistant embedded within a clothing retail website. There is no deliverable for this step.
2. *Develop scenarios* — Think about how the shopping assistant will help users. What are some tasks the shopping assistant can help users with? Develop 3 scenarios. The tasks from Dialogflow β (provided below) should be the basis of these scenarios. Reviewing the WiscShop API Docs will also be helpful in developing your scenarios.
3. *Identify design goals* — Determine what the shopping assistants can do to assist in these tasks. Consider aspects of the task where the assistant can bring added value. Our goal is not designing a fully autonomous assistant that could take care of everything with minimal input from the user, but what is called a *mixed-initiative design* where the assistant does what it's good at and the user does what the user is good at.
4. *Setup environment* — You can use the retail store interface provided in the WiscShop source code and/or another clothing retail store as your environment or prop during your acting.
5. *Act out interaction* — Ask a friend, family member, or another student in class to help you bodystorm user interactions with the shopping assistant to develop ideas and to more concretely define user and system behavior and interactions with the environment. Act out and record a transcript on at least one interaction for each scenario.
6. *Develop insight* — Capture the conversations from your bodystorming session and any other insight you have gained from the previous step in notes and translate them into a flowchart representation of the interaction.

Tasks that your Dialogflow β agent should support are listed below:

- Login
    - User is able to login with username and password. You do not need to handle account creation.
    - NOTE: It is sufficient if the user enters this information as a text query (typing), in case the username and/or password is hard to parse. It should still be in English, e.g. "Log in with username <username> and password <password>."
- Queries
    - *Categories:* User should be able to query about the types of products offered.
    - *Tags:* User should be able to inquire about the types of tags for a specific category.
    - *Cart:* User should be able to request information about what is in their cart (e.g. total number and type of items, total cost, etc.).
    - *Product Info:* User should be able to request information about a product. If the product has reviews, they should be able to inquire about reviews and average ratings.
- Actions

    - *Tags:* User should be able to narrow down the search results within a category by specifying tags, e.g. "Show me all the red ones".
    - *Cart:* User should be able to add/remove items (or multiple of an item) to/from your cart. They should also be able to clear their cart.
    - *Cart Confirm:* User should be able to review, then confirm their cart.
- Navigation
    - User should be able to navigate through the application with the voice assistant using natural language, e.g., "Take me to the home page" or "Show me the hats".
    - For a full breakdown of the various routes in the application, see the WiscShop readme.

Your deliverables will be the scenarios and design goals you have focused on, the transcripts of the bodystorming sessions, and a flowchart representation of the conversational capabilities suggested by your experience prototyping through your 3 scenarios. Your flowcharts can be in the form of a graph where the nodes are system behaviors and arrows are user behaviors. To generate flowcharts, you can use SmartDraw (using your NetID login) or free versions of other tools, such as LucidChart or Creatly.

<scenarios-and-design-goals>

Scenarios:

1. get into specific categories and tags of goods
2. add product to the cart / remove items from cart
3. review and confirm cart before purchase

Design-goals:

1. user can enter certain area by saying the keyword of categories or tags. The assistant will help user go to the page they want and filter them a correct result.

2. user can simply saying add certain item to the cart to add it. Or remove the item by giving the keyword of the item. The assistant will manage the item without making user go into cart page.

3. If user going to check out and finish purchase, after them says check out, the assistant will redirect to the cart page and open check out review and confirm page. User needs to say confirm purchase again to make the purchase.

<bodystorming-transcripts>

1. Get into specific categories and tags of goods

User: hello, I want to buy pants.

Voice assistant: OK, I have found 8 pants in our store. (Direct to all pants page)

User: Show me woman pants.
Voice assistant: Here is the result for woman pants. (limited to woman pants category)

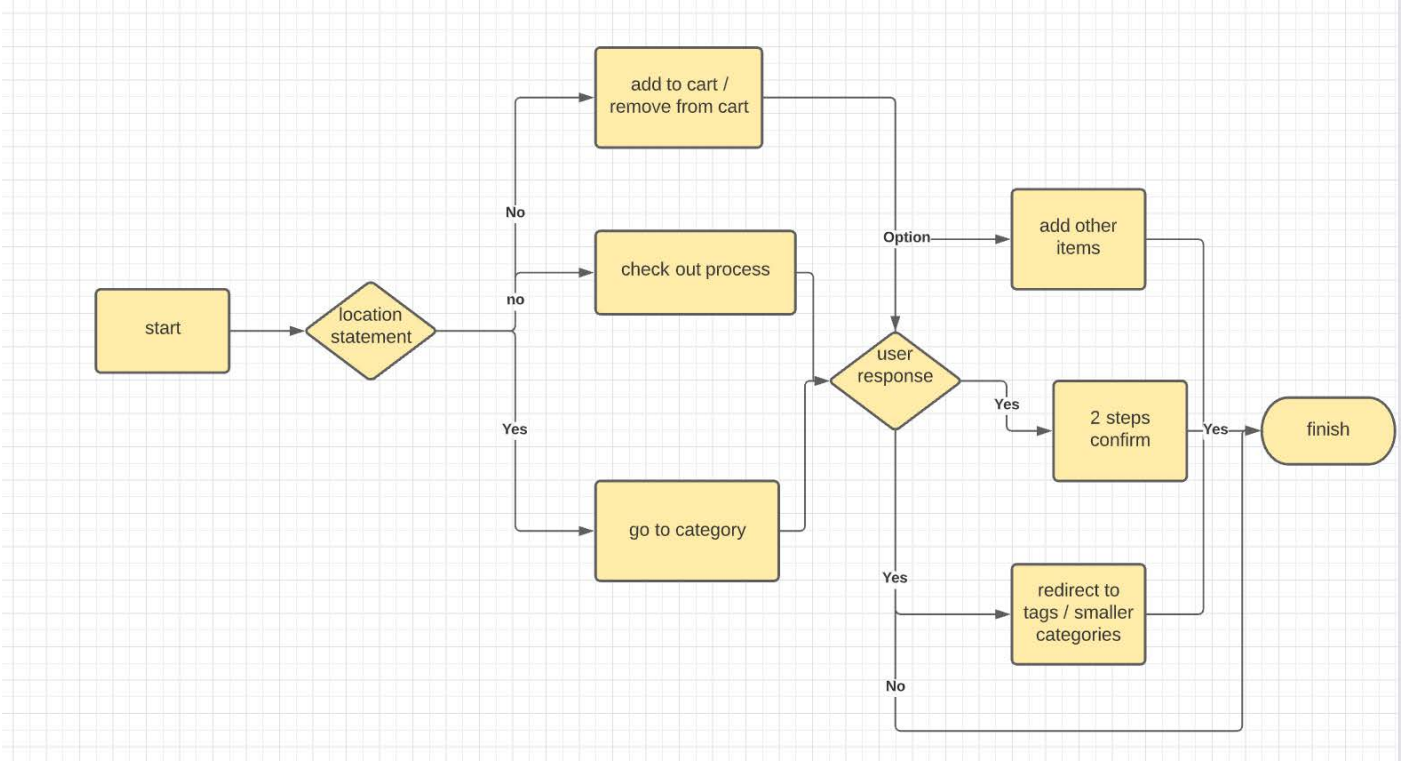
2. Add product to the cart / remove items from cart

User: Hello, Add this to cart
Voice assistant: Got you. XXX has been added to your cart.
User: Also add a red hat to the cart.
Voice assistant: Are you talking about “badger red hat?”
User: Yes
Voice Assistant: OK, it is in your cart now.
User: Wait, I changed my mind, remove that hat.
Voice: Ok, the “badger red hat” has been removed.

3. Review and confirm cart before purchase

User: I want to check out.
Voice assistant: Here is your total. Your order is XXXX, XXXX, XXX. (Direct to cart review page) Do you want to change or continue check out?
User: Good, continue check out.
Voice assistant: Your order has been processed. Thank you for shopping with us. Have a good day!

<flowcharts-for-each-scenario>



Part 2. Agent Specification (1.5 Points). In this step, you will apply what you learned in your experience prototyping activity to the design of the agent you will be creating. More specifically, you will draw on the outcome of your bodystorming session to determine the *intents* and *entities* that your agent will utilize in its conversation, and consider how you will use them and server data to provide responses.

If a particular intent or response is infeasible to implement the way you imagined in your bodystorming session, explain why, and propose an intent or family of intents which can be realistically implemented using the Dialogflow framework that will support the same functionality.

In this part, you will provide three main deliverables:

1. A list of all *intents* you will use (provide 10 training examples for each intent).
2. A list of all *entities* (provide at least five examples for each entity) you will be using with your agent.
3. For each *intent*, develop agent responses, specifically what it will *say in reply* (at least three responses to avoid repetition) and what it will *do* to change the GUI.

For a full description of what the GUI can do, and the requirements of the agent, see the Dialogflow β assignment details and the WiscShop API Docs.

<intents-and-training-examples>

1. Navigation

(1) Go to the cart
(2) Go to the home page
(3) Back to home
(4) Show me home page
(5) Get back to the home page
(6) go to last page
(7) Get Back
(8) Back to cart
(9) Go to higher level menu
(10) Direct to home page

2. Inquiry about Category / tags

(1) Show me all tags of pants.
(2) Show me all the woman cloth.
(3) What kind of tees do you have?
(4) What different styles do you have for tees?
(5) What kind of pants do you have?

(6) What kind of clothes do you have?
(7) Tell me the about the category that you have.
(8) What category are you offering?
(9) Show me the category list.
(10) What kind of woman shirts do you have.

3. Add to cart

(1) Add it to cart
(2) Add this one to cart.
(3) Add this.
(4) I would like to buy this one
(5) I need this item to be added to my cart
(6) I want to put this item to my cart
(7) put it into cart
(8) put it to my cart
(9) I want it
(10) I'll take it

4. remove from cart

(1) Remove this one
(2) I don't want this pant anymore
(3) remove it from cart.
(4) I am not planning to buy this one anymore.
(5) Remove the red shirt from my cart
(6) take this item away from cart
(7) remove all the items
(8) clean cart
(9) delete all
(10) remove the item

5. check out

(1) I want to check out
(2) Ok check out
(3) I am ready to go
(4) that is all I want
(5) that's all
(6) check out please
(7) buy all the items in my cart
(8) I would like to check out
(9) proceed to payment

(10) go to payment

<entities-and-examples>
Color:
1. Red
2. yellow
3. white
4. black
5. green

Tags:
1. man
2. woman
3. men
4. women
5. color
6. badger

Category:
1. hats
2. sweatshirts
3. leggings
4. tees
5. shorts
6. pants

Pages:
1. home
2. cart
3. item page
4. review page
5. check out page

<intent-responses-and-procedures>
1. navigation

Ok ,navigate to man shorts
Here is the page of man shorts
Check, go to man shorts
The assistant will direct and open the page user wanted.

2. Inquiry about Category / tags
We have 3 items in man's shorts, they are XX, XXX, XXXX
There are all the tees we have
Yes, we do have red pants.
The assistant will find the category / tags of the item and read out to the user.

3. add to cart
Added to the cart
Badger hat has been added
Sure, Badger hat is in your cart now
The assistant will add the item into the cart and stay at the current page.

4. remove from cart
Badger hat has been removed
Sure, it is removed from your cart
item removed
The assistant will remove the item from the cart and stay at the current page.

5. check out
Ok, here is all the items in your list
Sure, please confirm your items
Got it. Please check your order before you go.
The assistant will open up check out confirm page and read all the items in the list.