

CS 566: Voice Assistants HW1 - Designing VUIs

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1. **Selected Use Case :** Create a food cart directory for your city

Use Case : Order Ice-Cream

Application Name : “Cream Crush”

Brief Intro : Personally, For me a meal isn't complete without a taste of dessert on my buds. Through this use case, I am introducing Portlanders, an app called “Cream Crush” with Voice Assistant Enabled features to satisfy their sweet cravings while in Portland city.

2. **Keywords:**

ice-cream, dietary, sugar-free, vegan, allergic, gluten-free, desserts, dairy, calories, scoop, pint, waffle, cakes, eggs, chocolate, toppings, seasonal, fruits, mithai(alias sweet), hours, pickup, delivery, nearby, popular, price, reviews, recommendations.

3. **VA Personality and Style:**

Meet Ruchi, “Cream Crush” app Voice Assistant for the term.

Ruchi(She/Her) means Taste in Hindi and is in her mid-20s.

Ruchi is an intelligent, warm, funny and conversational foodie with a mellifluous Indian-American accent.

4. **Conversation Starters:**

Dialogue Starters:

1. Hey Ruchi, what's the most Instagrammable ambience dessert place in Portland?
2. Ruchi, I'm craving seasonal flavors! Any carts nearby that serve gluten-free options?
3. Hey Ruchi, I'm hosting an event and need a variety of Gulab Jamun Ice-Cream.
Can you help?

Follow-Up Sentences:

1. Can you tell me more about their menu and prices?
2. How are the reviews for seasonal flavors?
3. How far is it from my current location? Do they offer delivery options?

5. Dialogs:

Sample 1: Highly detailed conversation that includes, Menu, Reviews and Directions
(Inspired by Google Assistant)

Human User	Voice Assistant Ruchi
1. Hey Ruchi, I'm craving seasonal flavors! Any good carts nearby that serve gluten-free options?	
	2. Salt & Straw on Division Street has just launched their fall harvest menu! They have several gluten-free seasonal options and maintain a 4.7-star rating. Would you like to hear their current seasonal menu?
3. Yes, tell me about their Fall menu and latest reviews of them.	
	4. Here's their Fall menu with recent customer feedback: <ul style="list-style-type: none"> - Pumpkin Spice Goat Cheese - Perfectly balanced, not too sweet (4.9*) - Apple Cider Sorbet - Tastes like fresh-pressed cider! (4.7*) - Spiced Sweet Potato Marshmallow - Autumn in a scoop (4.8*)
5. Perfect. What's the wait time right now?	
	6. Current wait time is about 20

	<p>minutes as it's peak afternoon hours. I can suggest some less busy times - they usually have shorter waits before 2 PM or after 8 PM. Would you like directions to the Division Street location?</p>
7. Yes, I'm at Powell's Books. How far is it?	
	<p>8. From Powell's Books, Salt & Straw on Division is 2.5 miles away, about a 12-minute drive. You can also take the #4 buses which stop right in front.</p>
9. Great! Can you check parking availability nearby?	
	<p>10. Done! There's street parking available, and there's also a public lot a block away on SE Division and 33rd. Just a heads-up, it's metered. Anything else I can help you with before you head out?</p>
11. Nope, that's all. Thanks, Ruchi!	
	<p>12. You're welcome! Enjoy your seasonal scoops at Salt & Straw.</p>

Sample 2: Handling Order, Payment, and Confirmation (Happy case).

Note: I am not confident how the payment flow usually works with Voice Assistants as I have not used VA for such scenarios. But my idea is that the user has to provide an authentication before a payment is processed.

Human User	Voice Assistant Ruchi
1. Hey Ruchi, I'm hosting an event and need a variety of Gulab Jamun Ice-Cream. Can you help?	
	2. Absolutely! "Kulfi" in N Williams specializes in Indian fusion desserts. They offer bulk orders of Gulab Jamun Ice-Cream. How many servings do you need?
3. I need enough for 30 people.	
	4. They offer catering packages starting at \$120 for 30 servings, including their signature Gulab Jamun Ice-Cream with rose syrup topping. Would you like me to check their availability for your event date?
5. Yes, I need it for next Saturday.	
	6. Gotcha! Checking their calendar for 25 Jan 2025. They take pre-orders with a 50% deposit. Would you like to proceed to place the order?
7. Yes, Please.	
	8. Great! I'll need some details for your order. Under what name should I place the order, and at

	what time would you like it to be ready on Saturday?
9. The name is Chethana and 2 PM would be perfect.	
	10. Excellent! For 30 servings, would you like all classic Gulab Jamun Ice-Cream, or would you like to mix flavors? They also offer cardamom and saffron variations at no extra cost.
11. I'd like 15 classics and 15 cardamom please.	
	12. Perfect choice! Here's your order summary: - 15 servings Classic Gulab Jamun Ice-Cream - 15 servings Cardamom Gulab Jamun Ice-Cream And Pickup at 2 PM next Saturday for Chethana. The order Total is \$120. Would you like to proceed with payment?
13. . Yes, I'll pay with my credit card.	
	14. Sure! For that, You would need to unlock your phone and authenticate.
15. Done!	
	16. Perfect! I've processed your deposit of \$60. Your order confirmation number is #Order1234. The remaining \$60 can be paid during pickup. I'll send a confirmation email with these details. Is there anything else you need?
17. No, that's all. Thank you!	

	18. You're welcome!
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Sample 3: Quick user favorite order to save user time.

Human User	Voice Assistant Ruchi
1. Hey Ruchi, Please tell me Kate's is still open! I need that Double Fudge fix.	
	2. Good news - they're open for another hour! Do you want me to put a scoop on hold for you?
3. Yes please! I would like a pint packed to go.	
	4. Of course! I've reserved a pint of Double Fudge for you, packed with dry ice to keep it fresh for up to 4 hours.
5. Thanks, Ruchi!	
	6. You're welcome! Enjoy your Double Fudge fix.

Sample 4: VA resolving unknowns, and provides an alternative.

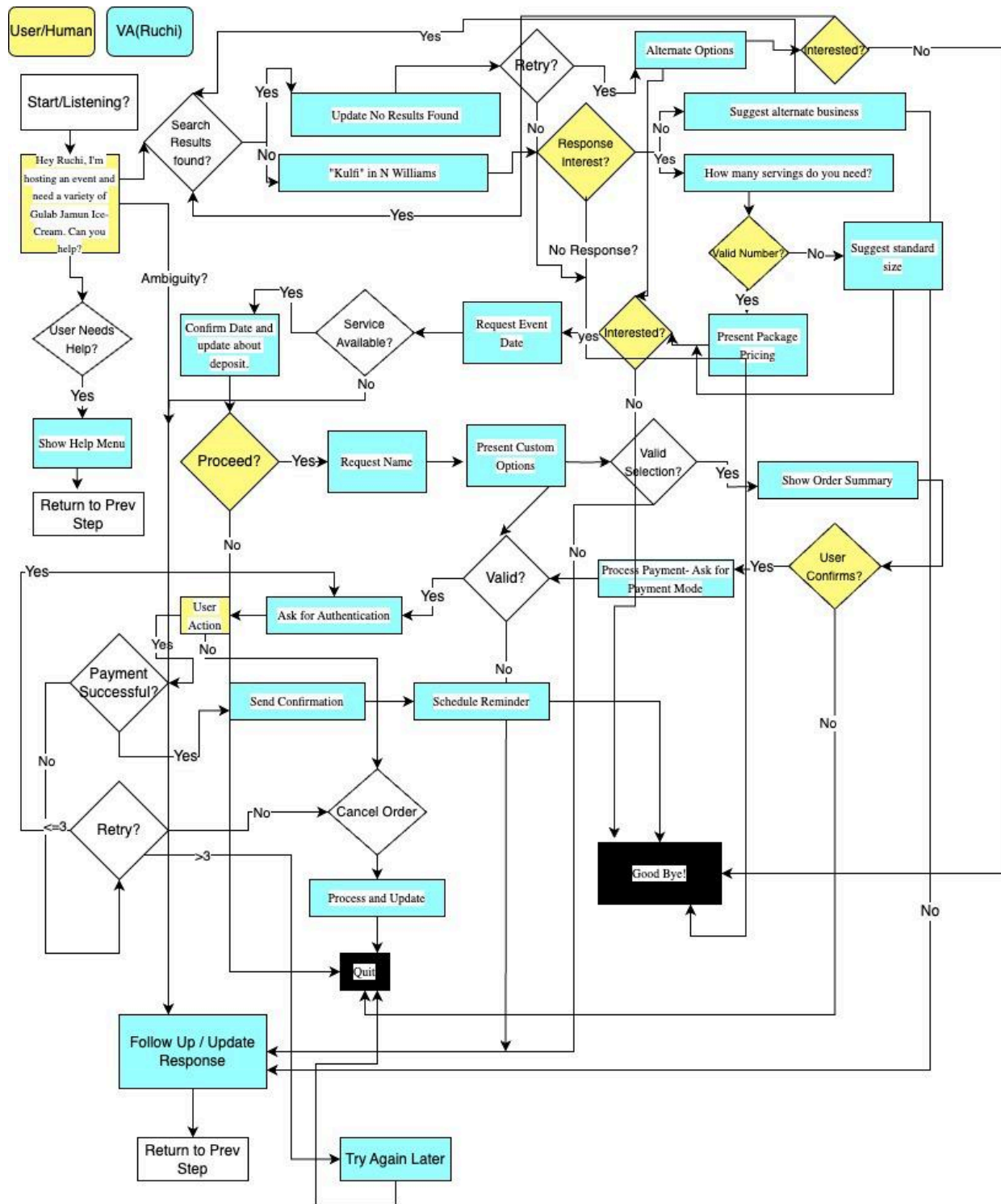
Human User	Voice Assistant Ruchi
1. Hey Ruchi, today's my husband's birthday, and I want to surprise him by taking him to his favorite ice cream shop right now. Can you check if it's open and suggest nearby options if it's not?	
	2. Happy birthday to him! What's his

	favorite ice cream shop?
3. Thanks. It's Salt and Straw.	
	4. Hmm, looks like Salt and Straw isn't open nearby right now, and the closest available one is 10 miles away. How about I find you a similar spot that's closer?
5. That sounds perfect.	
	6. Okay, I've got just the place! There's a shop nearby called Creamery Delights. They're famous for their vanilla - it's rich, creamy, and made with high-quality, natural ingredients. People rave about its silky texture and just-right sweetness. It's a go-to for anyone who loves classic flavors or wants a little indulgence. What do you think?
7. I think he'll love it. Thanks, Ruchi!	
	8. You're welcome! Treat him to the best, and don't forget to sneak in a scoop for yourself. Enjoy the birthday surprise!

Sample 5: 3rd party Integration with Doordash.

Human User	Voice Assistant Ruchi
1. Hey Ruchi, I'm in the mood for ice cream, but it has to be vegan. Any suggestions?	
	2. Sure! Sweet Scoops on Mississippi Avenue has a great vegan menu. Their Coconut Chai and Dark Chocolate Sorbet are highly recommended. Would you like more details?
3. Yes, tell me their hours and if they deliver.	
	4. They're open until 10 PM tonight and offer delivery through DoorDash. Should I help you place an order?
5. Yes, I would like one pint of each.	
	6. Done! Your order for Coconut Chai pint and Dark Chocolate Sorbet pint has been placed on DoorDash and will be delivered in about 30 minutes. Anything else you'd like?
7. Nope, that's all. Thanks, Ruchi!	
	8. You're welcome! Enjoy your vegan treats!

6. Conversational Flow Diagram for Dialog Sample 2: (Attached PDF File as well)



Cases Handled in Conversation Flow Diagram:

- Success Flow
- Error Flow
- Invalid Input
- No Response
- Authentication Verification/Confirmation
- Return to previous state
- Help Menu
- Resolving Ambiguity
- Option to Cancel
- Retry Mechanisms
- Handling Infinite loop in Retry Mechanism(Retries only ≤ 3 times)

7. Review and Reflection:

First Impressions: Designing a VA was a love and hate experience, especially as someone who doesn't usually rely on VAs due to privacy concerns with always-on listening. What I enjoyed most was imagining interactions from the both user and VA's perspective and designing conversations. Giving the VA a custom name felt more challenging and fun than naming my pet!

There were many tricky parts while doing the designing task. One scenario is while working on Dialog conversation 2, I wanted to include a conversation about Placing an order online and process payment using VA. While I have not used VA personally for this task, dealing with this conversation has been tricky. I went online and read through blogs about VA payments, Authentication methods via reddit and watched some tutorials. I learnt that it is always a better practice to involve the user to authenticate before the payment step could be fingerprint/ password because voice is such a scam with the technologies in hand.

Another tricky part is creating conversation flows diagrams, handling corner cases, failure scenarios, and backup steps. This step took most of the time and handled the overview steps that could be covered in a flow(Although there are lot more could be verified)

Personality: The personality traits of VA Ruchi closely match with the food blogger me including the traits that I wish I had. The name "Ruchi" means "Taste" in hindi. I have a sweet tooth and a love for exploring local dessert menus. I wanted Ruchi to be a reliable assistant who can understand queries, ask for clarification, resolve ambiguity, offer suggestions, and have the personality of a cool foodie assistant.

Success: Yes, I believe The above sample dialogues and Conversational Flow Diagrams are successful for the following reason.

1. User Satisfaction
2. Follow-ups to resolve ambiguity
3. Handling potential failure cases, infinite loops and taking actions through backup steps(Handled in Diagram)

Judging answers were mostly based upon user satisfaction and getting it right with minimal follow-ups.

Future:

I believe voice assistants will become incredibly efficient in the near future, particularly in their ability to understand multilingual user requests and respond with higher confidence thresholds, especially with the widespread use of LLMs.

The conversations I described above represent mostly successful cases, I feel examining error cases in depth could help understand system limitations and potential failure points. The obvious and fairly straight loops and conversations seemed to work fine. To address potential pitfalls, I think a wide variety of domain Infrastructure workflow knowledge may be helpful. Asking questions on What types of phrases/phonemes could create ambiguity? Which voice commands should be declined and addressed politely? Helped me to identify some edge cases. I need to work more on understanding VA from security concerns and resolving ambiguity to design better voice assistants for the future.