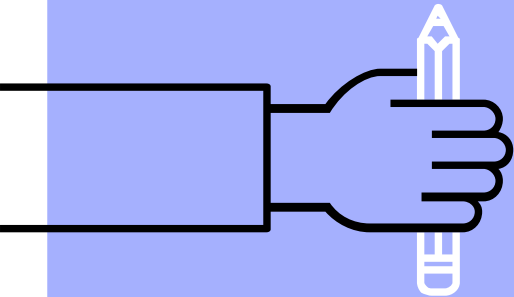
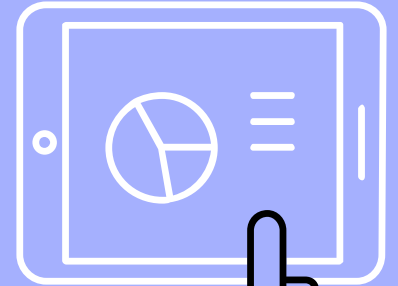
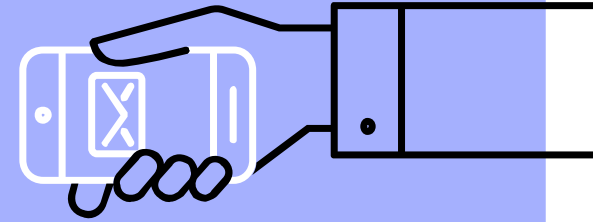


# Jim's Commute : Process Book



IXDO : Section A

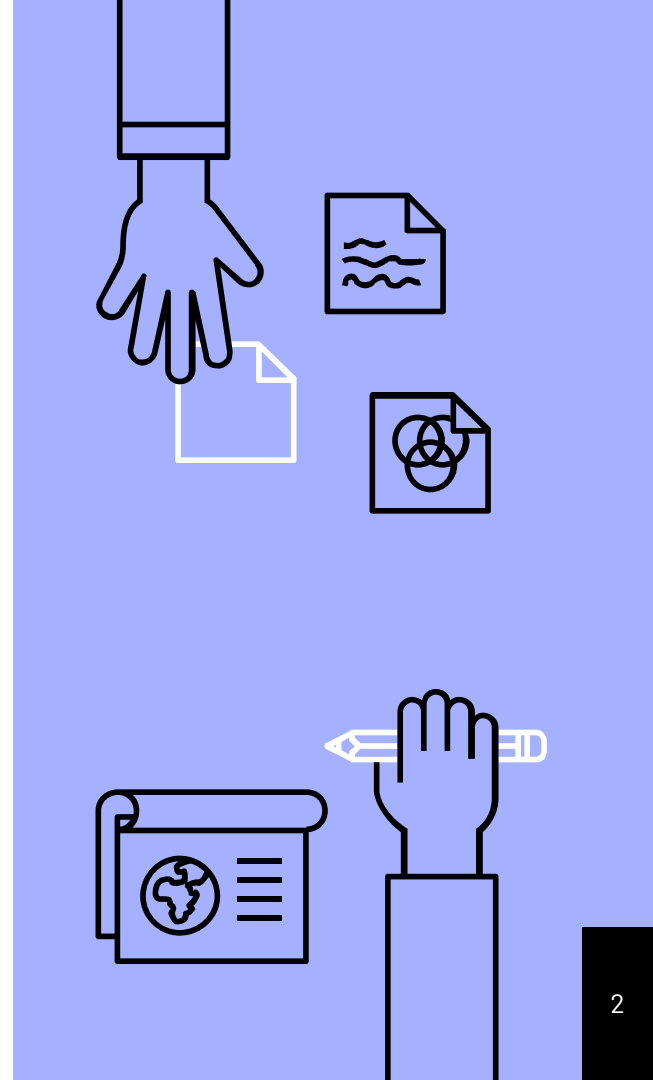
Project 4

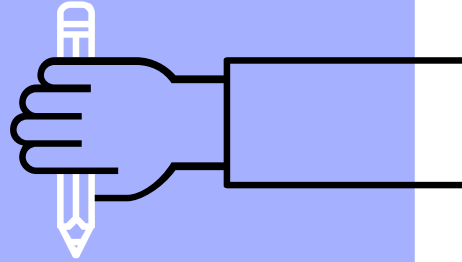
Team 9: Pooja Casula, Shujing Lin, Shiyang

Lyu, Shalini Rao

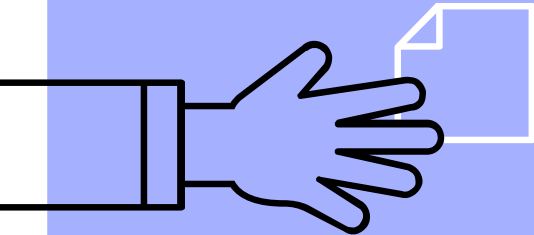
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# Scenario + Scripts



We began this project by collaborating on one scenario and then individually creating four different conversation scripts, with different topics.

# Primary Scenario

Jim is a manager in at Farcical Pharmaceuticals in Princeton, New Jersey. He puts in over 80 hours a week at his job. Due to the nature of his job, he spends much of his time at work sitting in a chair. As a result of this, he is experiencing many health problems, including obesity, high blood pressure and fatigue. Recently he has been put in charge of a big project and has been feeling even more stressed than usual. His busy schedule has also strained relationships with his family life as he does not have enough time to spend with them.

Jim's daily commute is 30 minutes by car and he has recently gotten an autonomous vehicle to take him to and from work. His route begins at his home on Van Dyke road and usually includes going on Nassau Street, which runs through Princeton University. His company, Farcical Pharmaceuticals, is located on Princeton Pike, approximately 15 miles from his home.

For the past week Nassau Street has been crowded with traffic due to a road closure on North Harrison street. This has added an additional 30 minutes to his daily commute. He leaves his home around 7:30 am and arrives back home around 6:30 PM.

Currently, he is on his way to the office in his autonomous vehicle. Feeling tired, stressed, and unsatisfied with his current situation he starts chatting with the CUI.



# High-level Conversational Structure

# High-level Conversational Structure design

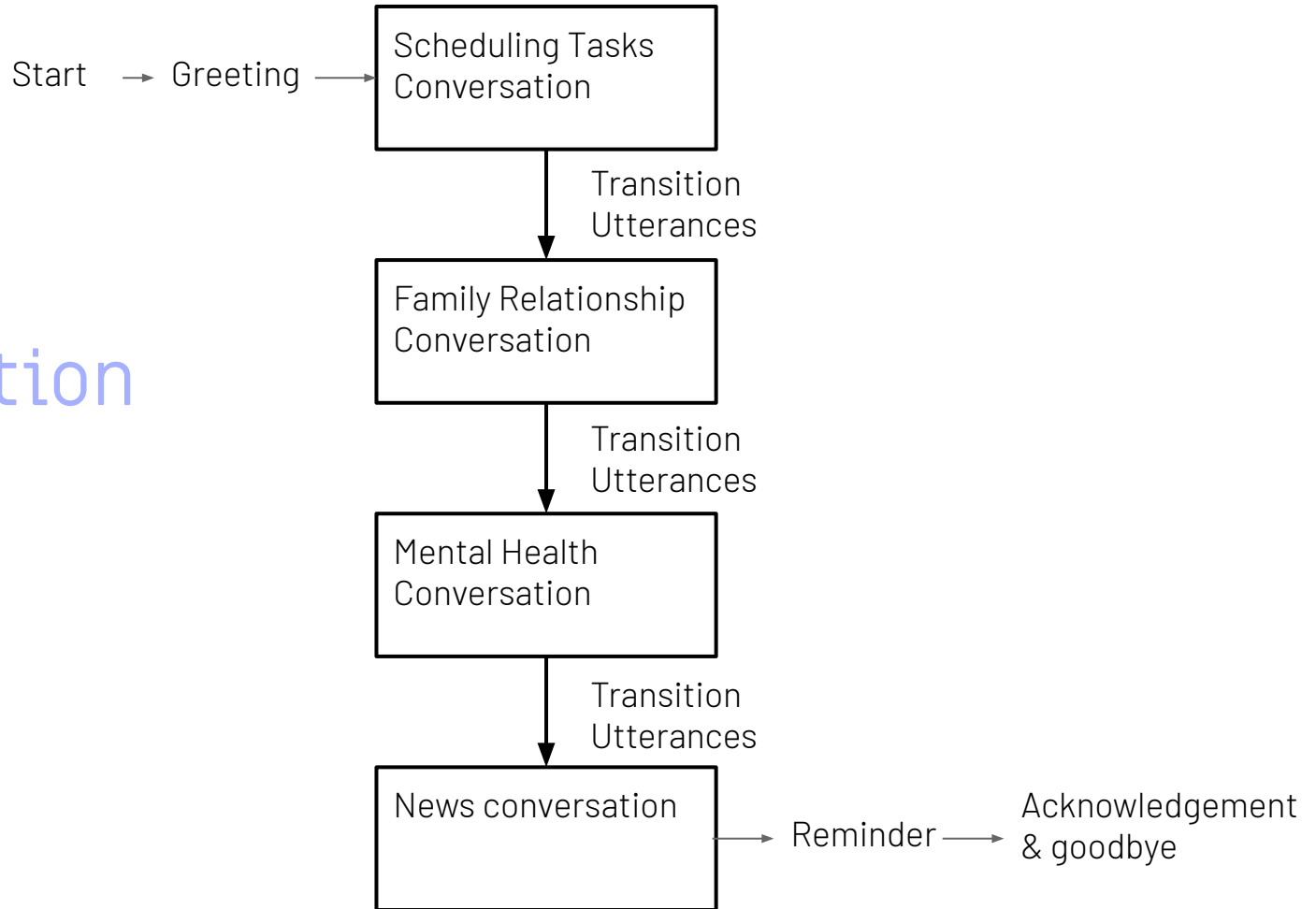
We designed 4 different dialogue pieces, and the transitions between them. The sequence of them are highly flexible, depends on the users' intents.

Each of the dialogue pieces can support multiple turns of conversation.

User may enter a conversation piece by two ways:

1. an intent being captured; or
2. the CUI suggest a topic, then user affirms (here the rationale for suggesting topic is based on the conversation history)

# A sample conversation flow



# Conversation Design



# Mental Health Initial Script

**Jim tells CUI that he is stressed...**

**CUI:** Would you like me to help you plan out time in your schedule when you can blow off steam?

**Jim:** Okay yeah sure.

**CUI:** Great. Let's start here. What do you usually do during your lunch break at work?

**Jim:** Well I usually go to the break room where I am eating lunch. But usually at this time people keep interrupting me.

**CUI:** Perhaps you could spend some of your break time walking outside? This way you people will not interrupt you and you could use the time to be alone? Also, moving around in the middle of the day could give you a wake up boost for the rest of the day.

**Jim:** That's not a bad idea, but what if I miss an important question or issue?

**CUI:** In your opinion, if you were to come back after a few minutes, could the issues be fixed then?

**Jim:** I suppose so.

**CUI:** Do you think taking a walk during your lunch break is doable?

**Jim:** I think so yeah.

**CUI:** Great! Try it out today and we'll chat more about it during the car ride back! Does that sound good to you?

**Jim:** Yeah. Thanks!

# Family Relationship Initial Script

**CUI:** I can tell that you really want to improve your relationship with your family. Would you like some advice?

**Jim:** Sure.

**CUI:** Let me check...You don't have a very tight schedule today. You are supposed to finish your work at 6pm. I think you can find a good place to have dinner with your family and do some catching up. I can make a reservation for you. What do you think?

**Jim:** That's a good idea.

**CUI:** Do you have a preferred restaurant?

**Jim:** No...Do you have any recommendations?

**CUI:** Yes! There is a popular seafood place called Blue Point Grill on 258 Nassau Street and they have special offer today. It might be a pretty good option.

**Jim:** Sounds great! I'll choose it.

**CUI:** OK. What time would you like to have dinner?

**Jim:** Mmm. What about 7:30?

**CUI:** For how many people?

**Jim:** Three.

**CUI:** OK. I have made the reservation for you. Just show up at 7:30 in the Blue Point Grill with your family!

**Jim:** Thank you so much!

**CUI:** You're welcome! One more thing, I think it would be better if you could bring some gifts to your kid as a compensation for yesterday's party. And you know what, tomorrow is Valentine's day! You should definitely have something for your wife as well!

**Jim:** Oh, really! Thank you so much for reminding me. Is it possible for me to get all the presents before dinner?

**CUI:** Yeah! I found a pretty good gift shop named America's Florist on your way to the restaurant. You can stop by to buy some gifts first!

**Jim:** Fantastic!

# Scheduling Initial Script

**CUI:** It seems like you've got a full day ahead of you. Do you want anything to perk you up?

**Jim:** I'll have coffee at work. What do I have set up for today?

**CUI:** You have a meeting at 9 with your supervisor. Then, you have a lunch meeting at 12:30 planned with Mr. Hamamoto to plan strategy for new clients. And at 3, you have another meeting with your team about their progress. You don't have meetings after that, but there are already 4 tasks that have been placed on your to do list, and the 2 leftover tasks that you didn't finish yesterday.

**Jim:** Jeez, I really have no time today. I need to schedule a conference call with our team in California too.

**CUI:** I can do that. Do you prefer morning or afternoon?

**Jim:** I would rather just get it over with early, so in the morning is good.

**CUI:** Okay, looking at the availability of the team in California, it looks like 10:30 is the best time. Should I put it in your calendar?

**Jim:** Yes, that sounds great.

**CUI:** Should I block out work time for you to finish your to do list?

**Jim:** Yes, block out any time in the afternoon that I'm not in meetings for tackling the todo list.

**CUI:** Great, I've scheduled the entire afternoon except for the progress meeting for concentrated work.

**Jim:** Can you schedule in a coffee break? I think I'll need a pick-me-up.

**CUI:** Done. Anything else?

**Jim:** Nope, I'm good. Thanks.

**CUI:** We'll talk about how today went and fix your to-do list for tomorrow on the way home. See you later!

# News Initial Script

**CUI:** Good morning, Jim. How are you today?

**Jim:** Tired. I am in charge of a big project and super busy this week.

**CUI:** I'm sorry to hear that. Would you like to hear some recent headlines?

**Jim:** Sure, I haven't got time to read news these days.

**CUI:** Here's a headline I found from [{Wall Street Journal}](#), [{Google's 'Project Nightingale' Gathers Personal Health Data on Millions of Americans}](#)

**Jim:** Oh, my colleague mentioned this yesterday, I am concerned about the privacy issues. What do you think?

**CUI:** Well, as a bot I actually don't have an opinion on that, but I can tell you what do other people think.

**Jim:** Sure.

**CUI:** [{This project has already attracted criticism from those who argue that it takes away patients' control of their own data.](#)

["There's a massive issue that these public-private partnerships are all done under private contracts, so it's quite difficult to get some transparency," said Prof Jane Kaye at the University of Oxford.}](#)

**Jim:** Yes, that's the same as I thought. What did Google say?

**CUI:** [{In a blog, Google said its work with Ascension would adhere to industry-wide regulations, such as the US Health Insurance](#)

[Portability and Accountability Act of 1996 \(HIPAA\).}](#)

**Jim:** ok, what else?

**CUI:** [{"To be clear... patient data cannot and will not be combined with any Google consumer data," the firm added.}](#)

**Jim:** Well, even if Google does not combined health data with consumer data, I still think it's illegal according to the privacy law, right?

**CUI:** Well, I haven't found any news article confirms that google's Project Nightingale has broken the law. But one comment mentioned that, [{In the UK, Google's AI-focused subsidiary DeepMind was found to have broken the law when it failed to explain properly to patients how their data would be used in the development of a kidney disease app.}](#)

**Jim:** So how did DeepMind use those data?

**CUI:** [{The information was used to develop and refine an alert, diagnosis and detection system that can spot when patients are at risk of developing acute kidney injury \(AKI\). The result was an app called Streams, designed to help doctors spot patients at risk of AKI.}](#)

**Jim:** How did DeepMind response to accusation?

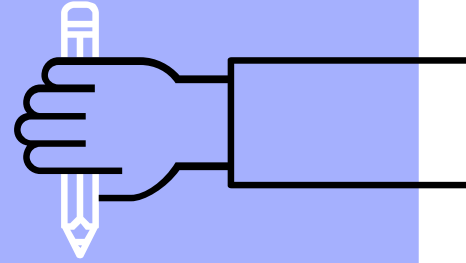
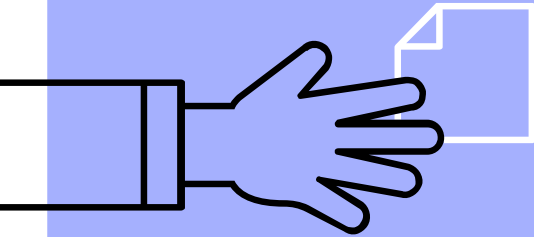
**CUI:** [{In a statement, Google said it welcomed the "thoughtful resolution" of the case and added that it would reflect on its involvement with the hospitals.}](#)

**Jim:** Ok.

**CUI:** Ok, would you like to hear another news?

**Jim:** No, thanks.

# Evolution of Conversation



# Exploring forms of conversation

Based on our lecture in class there were four types of conversations we explored: Delegating, Controlling, Collaborating and Guiding. We were encouraged to formulate different versions of our individual conversations to fit these four types. This gave us a better sense of how to fit together the four individual conversations to make one coherent one.



# Mental Health Chats

## Guiding

**CUI:** Great. Let's start here. What do you usually do during your lunch break at work?

**Jim:** Well I usually go to the break room where I am eating lunch.

**CUI:** Perhaps you could spend some of your break time walking outside?

## Delegating

**CUI:** Great. Let's start here. How about rethinking how you use your lunch break time?

**Jim:** Oh! I can use some of my lunch break to walk outside!

## Collaborating

**Jim:** I'm not sure how to blow off steam during work?

**CUI:** Well do you have break time during work?

**Jim:** Maybe I can take a walk during my break?

## Controlling

**CUI:** Great. Let's start here. How about spending some of your lunch break at work, walking outside?

**Jim:** Well I usually eat my lunch in the break room. But I think that would be a good idea for me!

# Family Relationship Chats

## Guiding

**Jim:** I really want to improve my relationship with my family. What can I do?

**CUI:** How about calling your wife right now and apologize to her?

**Jim:** I don't think she will be available to answer my call right now.

**CUI:** Then, since you will finish work earlier today. What about having a nice dinner with your family?

**Jim:** OK. Good idea.

**CUI:** Would you like me to make a reservation for you?

**Jim:** Sure. Which restaurant is better?

**CUI:** How about Blue Point Grill? It is on 258 Nassau Street, which is on your way back home. And they have special offer today.

**Jim:** Sounds good.

## Delegating

**Jim:** I want to improve my relationship with my family in whatever ways you say.

**CUI:** OK. I think you can have a nice dinner with your family tonight since you finish work earlier.

**Jim:** Great. Tell me which restaurant is better.

**CUI:** How about Blue Point Grill? It is on 258 Nassau Street, which is on your way back home. And they have special offer today.

**Jim:** No problem.

## Collaborating

**CUI:** I think you need to have some rest. Maybe you can take a few days off to relax yourself.

**Jim:** That's not possible, I am leading a big team and everything will be messy if I am away. I just want to improve my family relationship without sacrificing my career.

**CUI:** OK. Then you should try your best to spend more time with them.

**Jim:** Yes.

**CUI:** What about having a nice dinner with them tonight as you will finish your work earlier.

**Jim:** Good idea.

**CUI:** What about me making a reservation for you right now?

**Jim:** That would be great. Do you have any restaurant recommendations?

**CUI:** How about How about Blue Point Grill? It is on 258 Nassau Street, which is on your way back home. And they have special offer today.

**Jim:** Sounds good.

## Controlling

**CUI:** As you want to improve your family relationship and you have some time tonight, go ahead and have dinner with your family.

**Jim:** Okay. Which restaurant should I go to?

**CUI:** There is a popular seafood place called Blue Point Grill on 258 Nassau Street and they have special offer today. I will make a reservation for you.

**Jim:** Alright.



# Scheduling Chats

## Guiding

**Jim:** I'm so busy today, I need to schedule a conference call.

**CUI:** I can schedule that for you. Maybe you could schedule it for this morning?

**Jim:** It seems like 10:30 works best for me, that sounds good.

## Delegating

**Jim:** Could you schedule a conference sometime this morning?

**CUI:** It seems like 10:30 is the best time for everyone, so I've scheduled the call for you.

## Collaborating

**Jim:** I need to schedule a conference call with our team in California too.

**CUI:** I can do that. Do you prefer morning or afternoon?

**Jim:** Morning is good.

**CUI:** It looks like 10:30 is the best time. Should I put it in your calendar?

**Jim:** Yes, that sounds great.

## Controlling

**Jim:** When should I have a conference call today?

**CUI:** I've scheduled it for 10:30 am today, based on your availability and the availability of your colleagues.

# News Chats

## Guiding

**Jim:** I want to know what's happening recently, what are my options?

**CUI:** How about some headlines from BBC?

**Jim:** Hmm, I would prefer the Wall Street Journal.

**CUI:** Sure, here's a headline I found from Wall Street Journal, Google's 'Project Nightingale' Gathers Personal Health Data on Millions of Americans.

## Delegating

**Jim:** CUI, some news please.

**CUI:** Here's a headline I found from Wall Street Journal, Google's 'Project Nightingale' Gathers Personal Health Data on Millions of Americans.

## Collaborating

**Jim:** CUI, how about I listen to something?

**CUI:** Would you like to hear some recent headlines?

Jim: Sure, I haven't got time to read news these days.

## Controlling

**Jim:** CUI, give me some headlines from the Wall Street Journal.

**CUI:** Sure. Here's a headline I found from Wall Street Journal, Google's 'Project Nightingale' Gathers Personal Health Data on Millions of Americans.

# User tests for News Chat

We did some Wizard of Oz user research to figure out when user have a talk on News with CUI, what do they expect and what kind of information do they want.

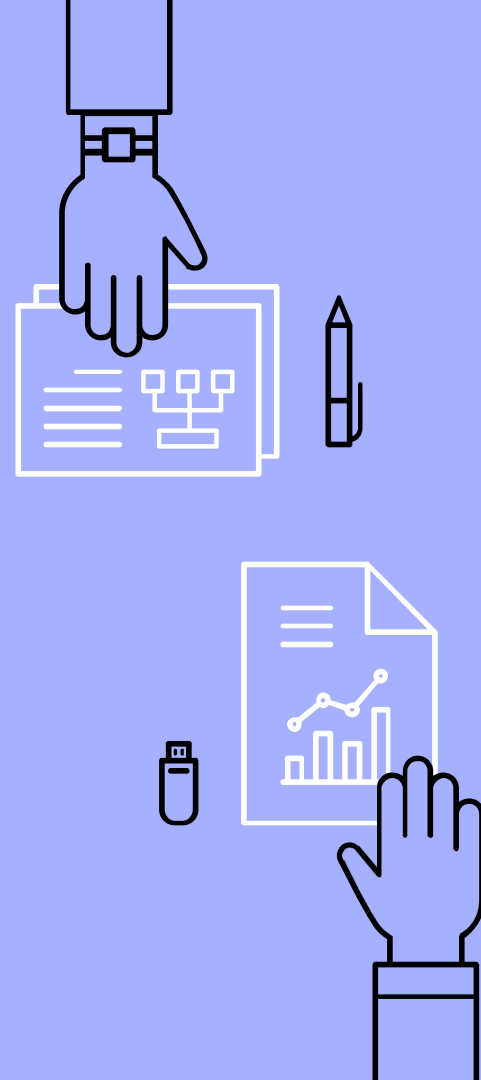
We used the insights to refine our new dialogue.

## INSIGHTS:

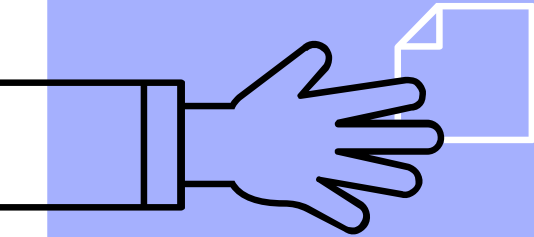
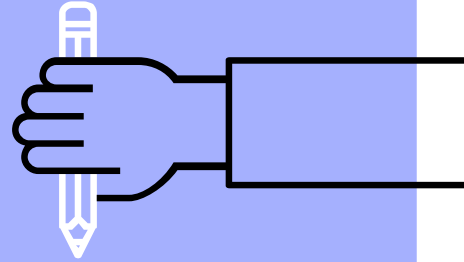
1. **Users want to know the news source**, because they want to confirm that what he/she gets is from an unbiased source.
  - (Bad) 'Here is a headline about {topic\_news}: {headline}'
  - (Good) 'Here is a headline I found from {source}: {headline}'
2. For first-time users, it's better to ask open-ended question (topic):
  - "What topic are you interested in?"For returned users, it's better to prompt the frequent topic/source from conversation history.
  - "Would you like some healthcare news from the Wall Street Journal?"
3. Some users want to know the comments on the news. Some also want to know how different media report the same piece of news differently.

# Post-Exploration Insights

We noticed that much of Jim's conversation with the CUI would fall under collaborating and delegating. Jim may prompt the CUI with an emotional prompt or ask the CUI for advice on something. The CUI suggests to Jim what he may do to destress or what he may buy for his wife, prompting Jim to disagree or take the conversation in a different direction. The nature of this conversation seems to fit well under delegating.



# Final Conversation Model



# Persona

## Who is Jim?

- 42 years old
- Lives in Princeton, NJ
- Manager at Farcical Pharmaceuticals
- Is married and has 3 kids

## What is on Jim's mind?

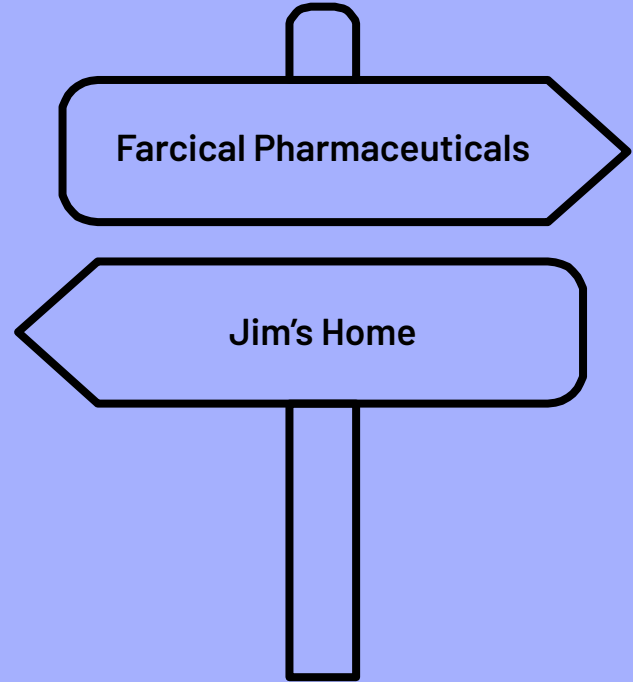
- Busy, works over 80 hours a week.
- He is stressed and fatigued because of his work.
- No time to spend with family.
- No spare time to read news.



Jim

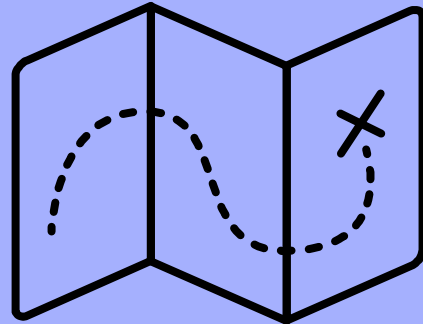
# Purpose & Current State

Jim is traveling from his home to his work, which is 15 miles away. Currently, he is on his way to the office in his autonomous vehicle. Feeling tired, stressed, and unsatisfied with his current situation he starts chatting with the CUI.



# Context

There are four phases that Jim has in his conversation with the CUI : **Mental Health**, **Family Relationships**, **Scheduling** and **News**.





# Context & Common Ground

## 1. Conversation History

Our conversation is built upon the previous conversations that Jim and the CUI had.

Which include:

- **Family issues.** In the previous conversations, Jim mentioned he has no time being with family frequently, and the CUI has stored the data.
- **Mental health.** Jim's sentiment level is being measured in previous conversations. The CUI knows that his sentiment is relatively negative.
- **News.** In the previous conversations, Jim often asked the bot to read the recent headlines. The CUI knows that the most frequent topics Jim mentioned are technology and healthcare.

## 2. Jim's Schedule

The CUI has access to Jim's calendar and to-do list and can plan tasks accordingly.

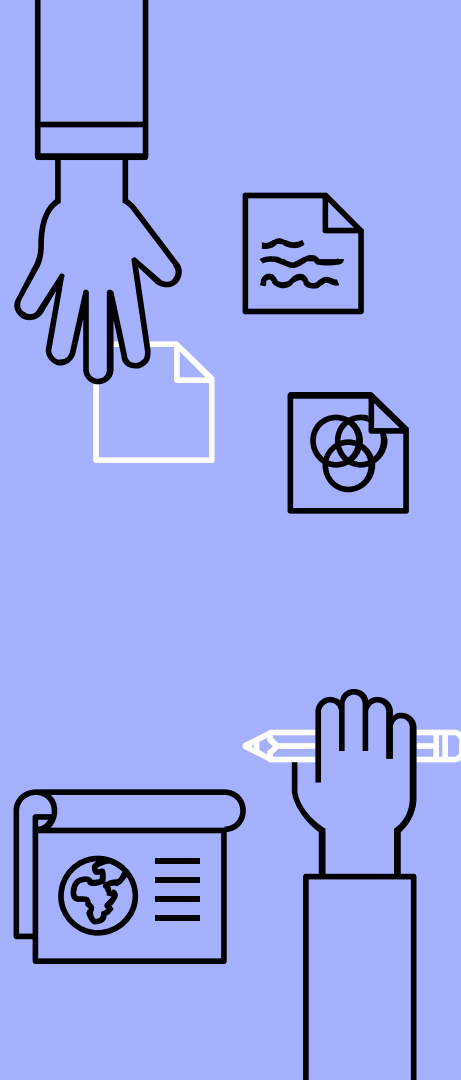
# Conversation Context

## Mental Health

Jim is stressed about being in charge of a big project. He is unsure about whether they will finish the work by the deadline. The CUI will schedule some time for him to relax in the conversation.

## Family Relationship

Jim finds it hard to spend time with family due to his busy work schedule. And he is having strained relationship with them. The CUI will give him some suggestions about how to improve family relationship.



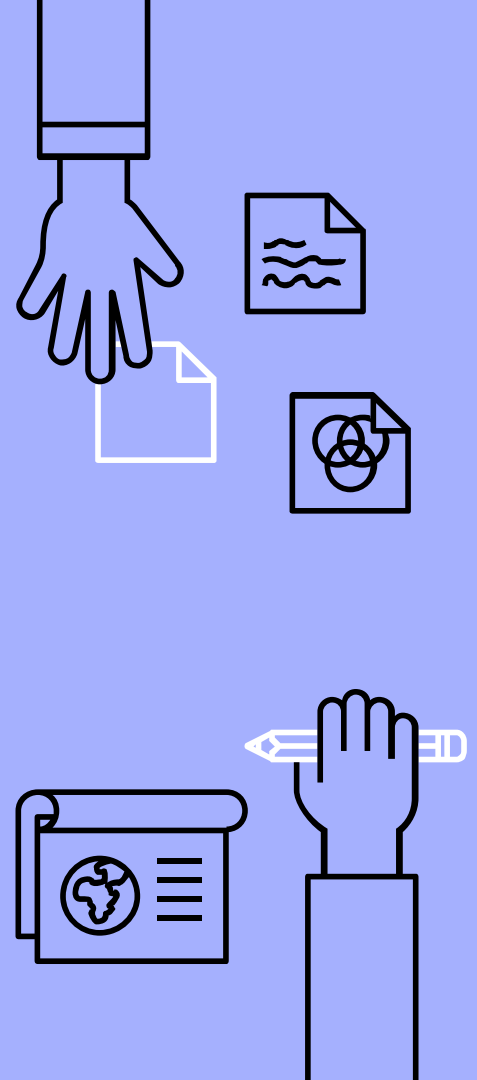
# Conversation Context

## Scheduling

Jim normally uses his time in the car to go over his daily schedule at work. He is able to add and remove things from his schedule.

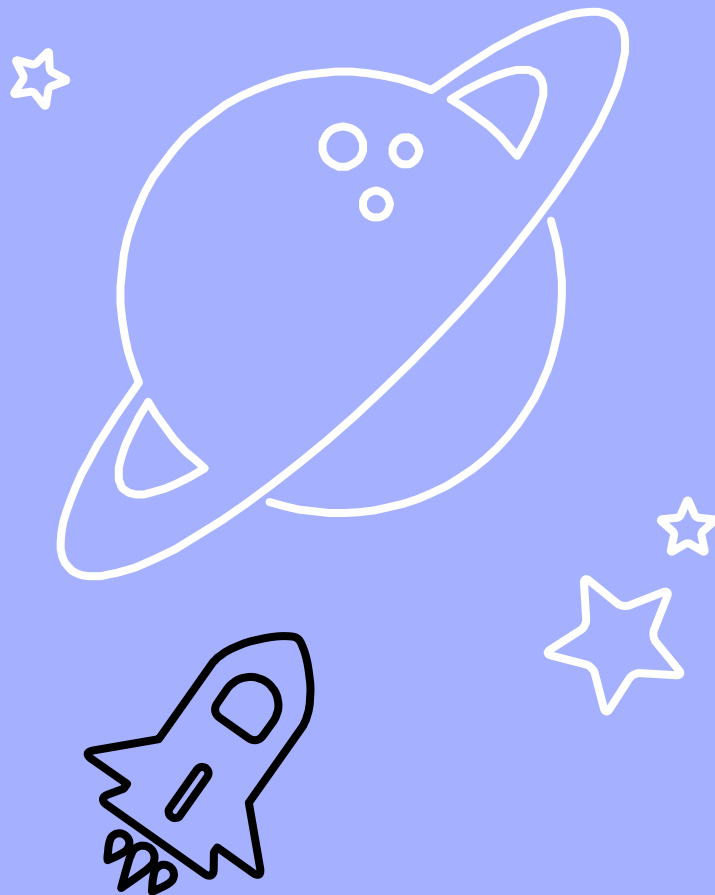
## News

Due to his recent stress, Jim has been unable to keep up with the current news. He relies on the CUI to keep him updated.



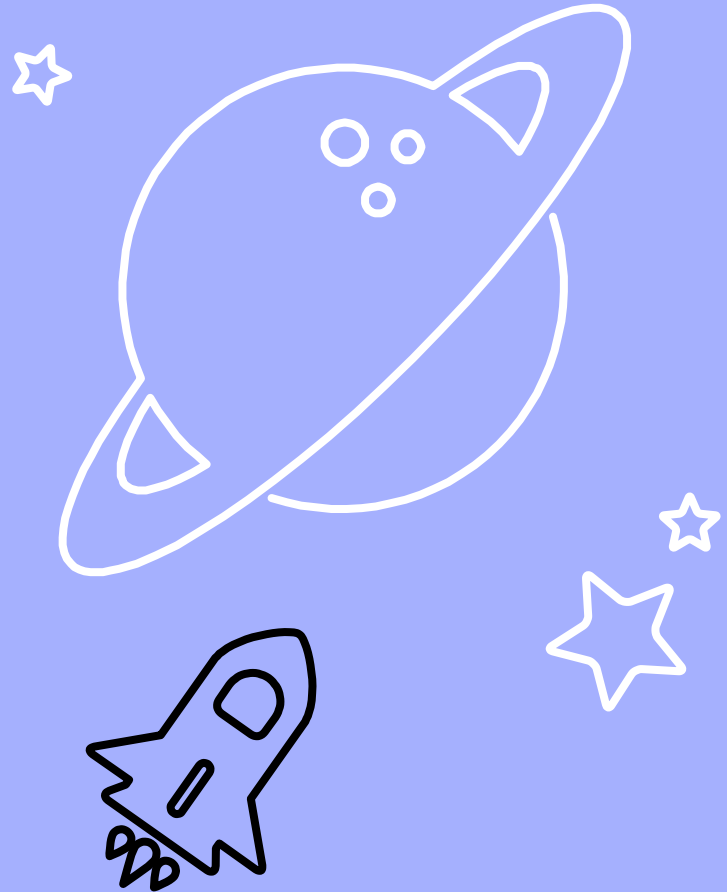
# Post- Conversation Expectations

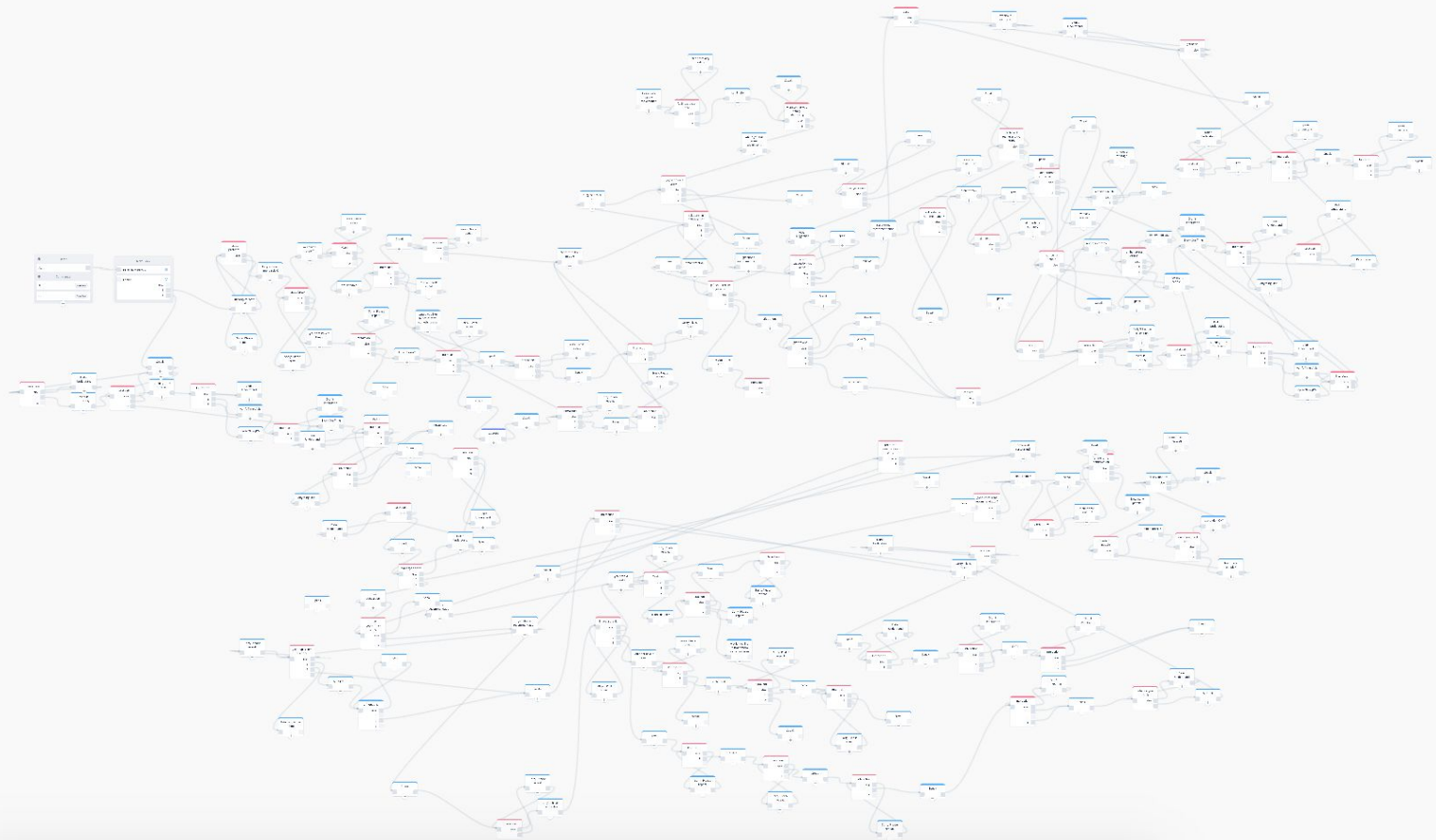
After chatting with the CUI, we expect Jim to be more relieved about his work, more confident in how to build a better relationship with his family, more organized with his daily schedule, and make better use of his time in the car.



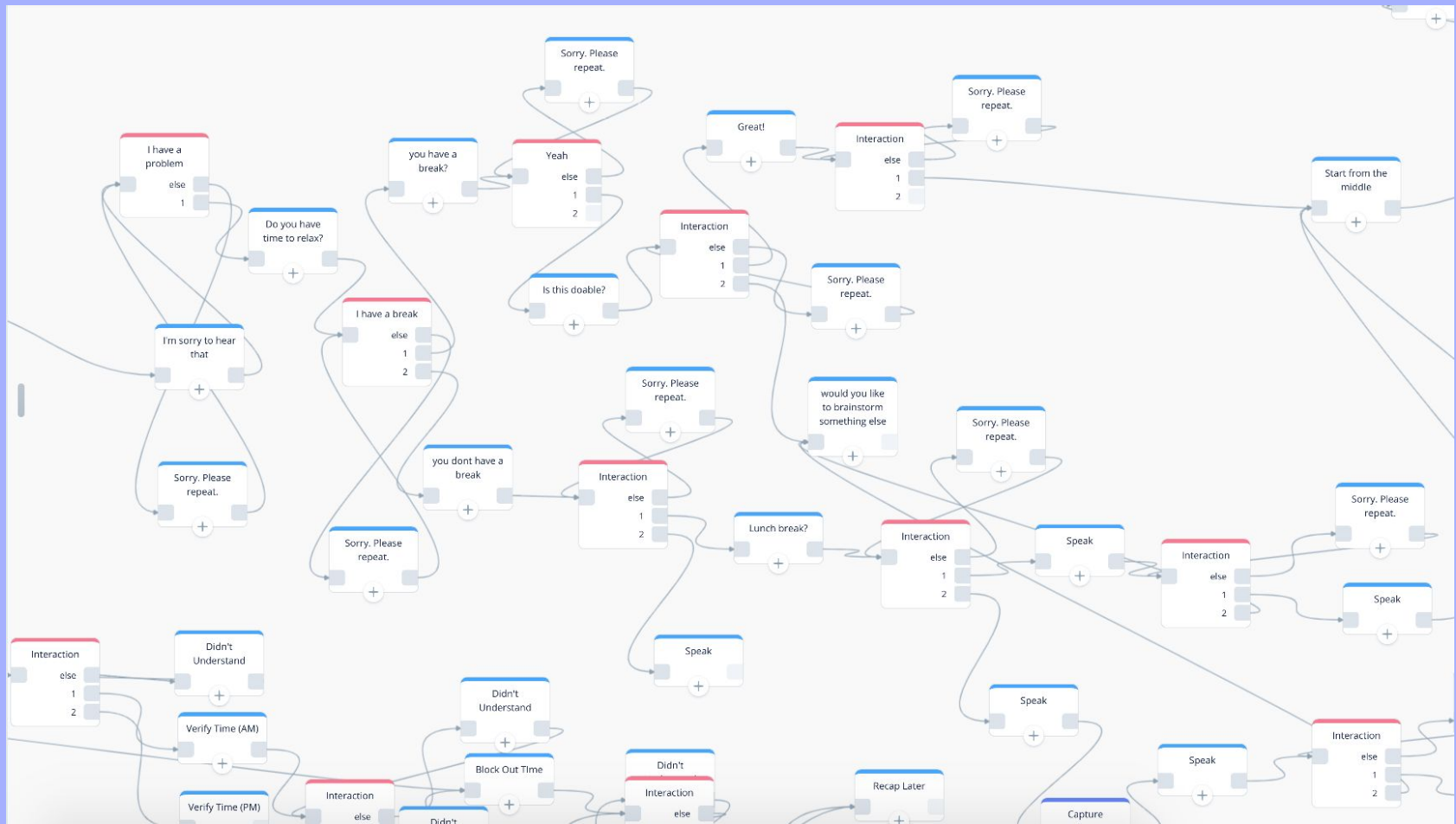
# Voiceflow Screen-Captures

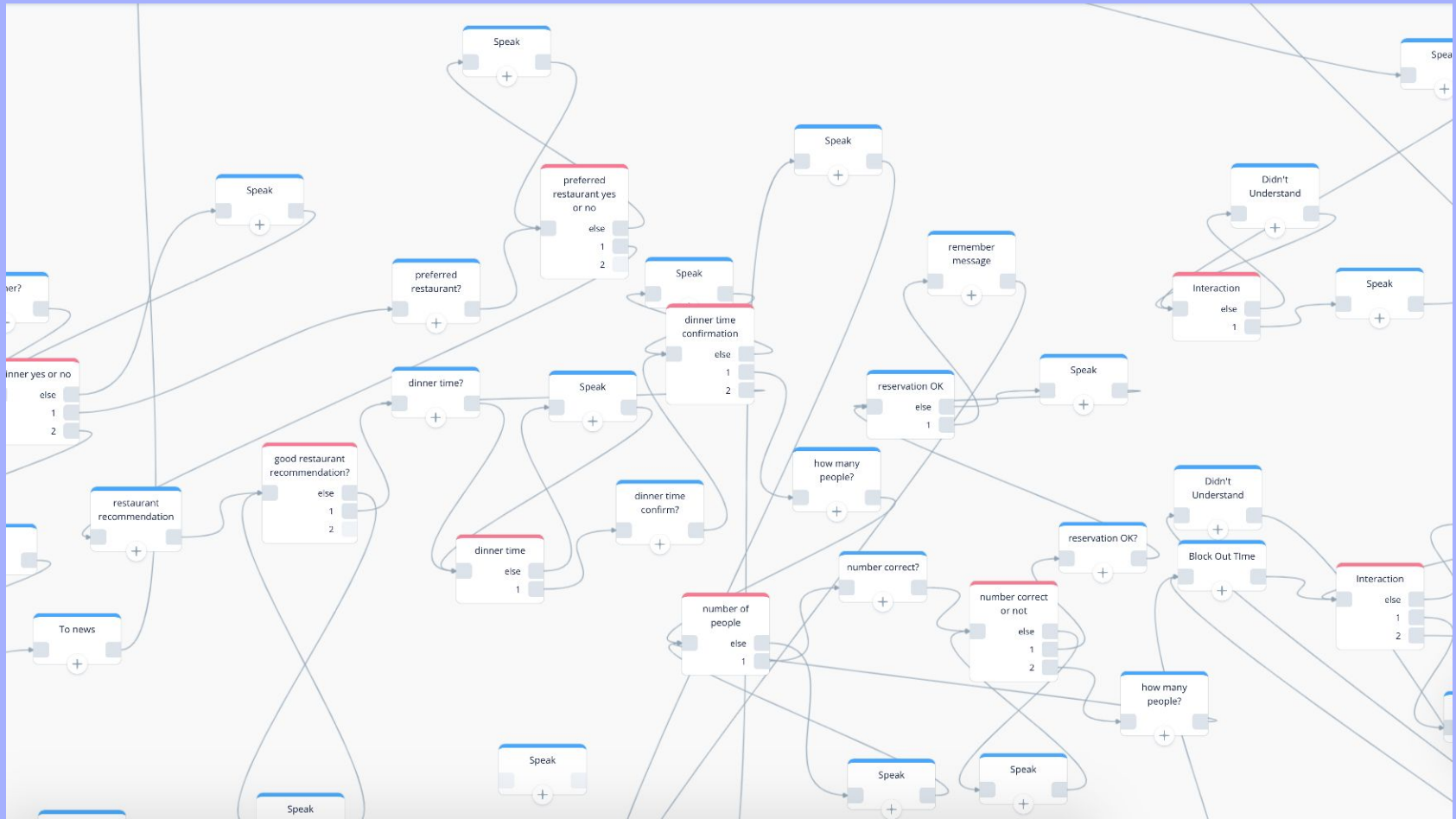
We've added several images from our voiceflow code in order to show the complexity of our project.



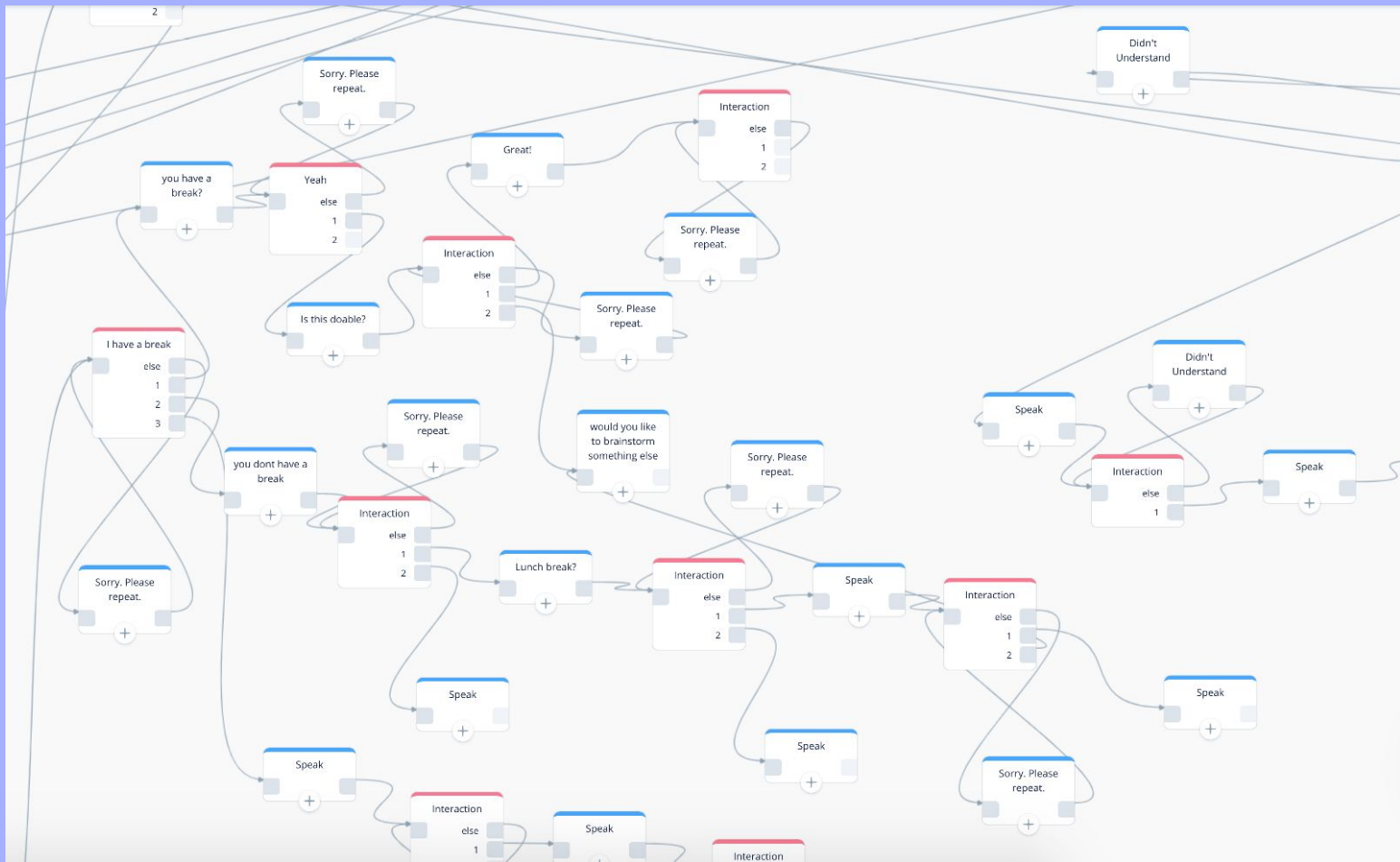


Our entire project









We wrote many synonyms for all of our intents. In this case, we wrote 21 different variations for how Jim may ask the CUI for news.

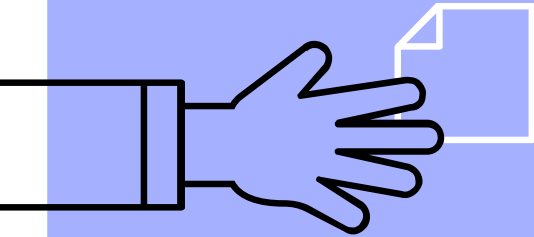
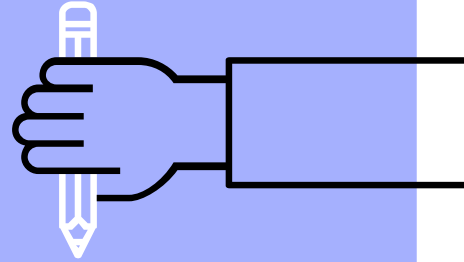
get\_news

Enter Synonyms

- I haven't got time to read news these days
- What are the recent headlines
- tell me some news
- What's new these days
- Send me latest news updates
- give me current affairs
- send news updates
- Fetch some news
- news please
- tell me something about what's happening around
- give me some news

- tell me something about what's happening around
- give me some news
- i want to get some news
- So can I get some news
- Can we talk about the news
- sure get me some healthcare news
- sure give me some healthcare news
- give me some healthcare news
- i want to hear some healthcare news
- i want to hear some news about healthcare
- i want to hear healthcare news
- sure can I hear some news in the meantime

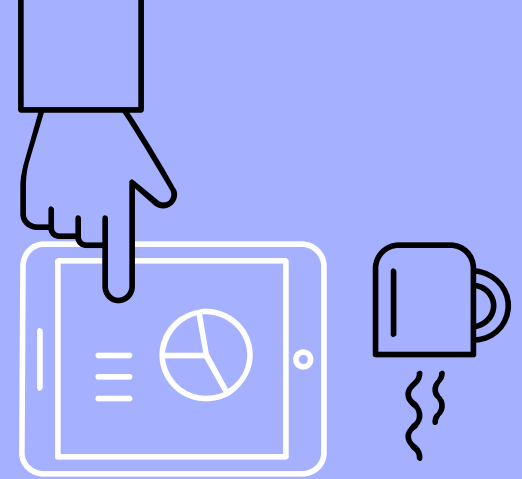
# Future Focus + Reflections



# Future Focus : What would we like to have added?

As a team we really would have liked to collaborate on the project at the same time. In the end it didn't really impact us that much, but it would have been nice.

We also really would have liked to properly figure out how to trigger standalone intents. We spent a lot of time discussing paths and figuring out how one individual aspect of the conversation could shift to another. But, in real life, conversation is a little more spontaneous and less staged. In real life, Jim would be able to easily shift from chatting about Mental Health to News without creating too much confusion. We had trouble figuring this out, but perhaps if we had more time we could implement something that could do this.

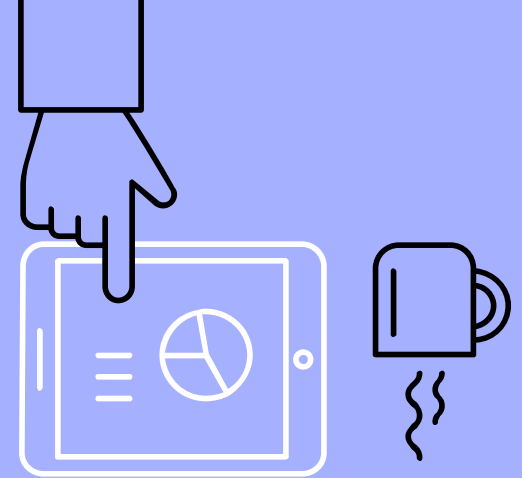


# Limitations : What we wished could have been different

While working on this project we ran into a couple of roadblocks that we had to work around. One major one was the lack of ability of the Alexa intents in Voiceflow. The 'YesIntent' and 'NoIntent' did not work in Voiceflow. For example, if we had an Interaction block with the 'YesIntent' and while testing we said 'Yes', the session would end because it did not recognize the term. To work around this, we simply created our own intents, but these presumably lacked the robustness that the Alexa intents have.

We also struggled with contractions and synonyms. In one case, Voiceflow was unable to recognize that "I am" and "I'm" are the same, prompting us to create two versions for the same sentence that used either "I am" or "I'm". This was a subject of annoyance as while testing, one of us would forget that we needed to account for both regular and contracted versions of words.

The issue of having to start the long test from the beginning over and over again when there are bugs also troubled us a lot and wasted us a lot of time. We could be much more efficient if we could start right from where the bug occurs after we fix it.



# Reflections



# Pooja Casula - Reflection

I really enjoyed working on this project. I learned a lot about conversation and have begun thinking about the kind of conversations I have on a day to day basis. In what contexts do I usually have a conversation that would fall under 'Delegating' or 'Collaborating'? Through this project I also learned about chat-bots and their limitations. In our project, we experimented with how one might have personal conversations with a chat-bot. How do people trust their personalized CUI, especially if they interact with it for a significant amount of time every day. Would their trust increase? Would they be more likely to share personal information, knowing that the chat-bot is not a human and doesn't necessarily have empathy? I've begun asking more interesting questions about the role of conversation in the future of AI and HCI.



# Shujing Lin - Reflection

This project was very interesting to me. I actually were not fond of using chatbot before since I thought they are not more useful than a web searching engine. This project broadened my horizons by bringing up the great potentials of conversational user interface and different perspectives to think about a conversation. The process of writing scripts was entertaining in that I could put away my concerns about the limitations of a chabot and made it as intelligent as a human.

The four models of conversations also provided me with insights on how various a conversation could be. However, while actually implemented it in VoiceFlow, the fact that we still had to consider CUI's limitations disappointed me and kind of constrained our thinking. The concern about CUI not being able to capture long phrases made our conversations lack of user reply varieties. This project put us into the most ideal scenario to implement a CUI omitting lots of the practical factors, but it made me curious about the future of CUI and the topic on how and whether to make it more humane.





# Shiyang Lyu - Reflection

I enjoyed this project. It's great to have a non-screen-based interaction design project in an overview course. The most important thing for me is, having the chance to zoom out of the web or App UI to think about high-level design principles and methods that could be generalized. It's helpful for me to make what I have learned transferable. For example, consider context, scenario, personas, use confirmation, etc. I start to think about the role that robots or AI agents take in people's daily life, what kind of service that people needed and what's the boundary for AI or robot agents to engage in people's life. I also like our project topic, a CUI in an autonomous vehicle, because it's on the technology fashion front, and we are able to do something pushing the boundary.

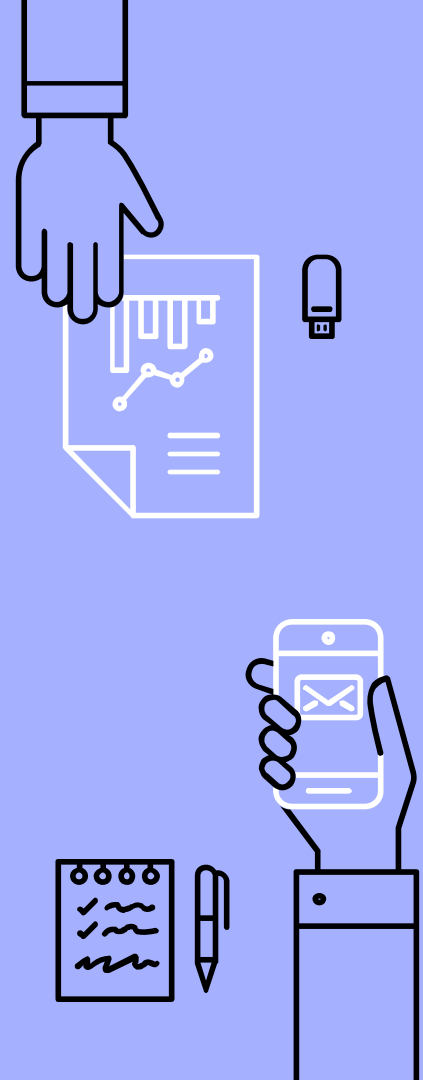
I would suggest that to add some practical content such as the art of defining intents and set slots, what are the technological capabilities of today's robot, what are the spaces that designers could play with. That could be more helpful for students' future career as a conversational UI designer.



# Shalini Rao - Reflection

This project was a new type of challenge because it had minimal visual aspects. It was solely based on planning, conversation flow, and logical reasoning when figuring out the sequence of a conversation and the different forks and paths possible. I thoroughly enjoyed talking through the problems with my teammates and bouncing ideas about the possibilities available with our project and different topics. It was very interesting to go through the testing and debugging together, but it was overall a fun project. I wish we were taught a bit more about using slots and the other blocks available. It would have been a new twist to incorporate those items in our conversation flow.

Chat interfaces and conversational AIs are a growing fad as virtual assistants become embedded in everyday technologies, so it was eye-opening to think through the structure and design of our own.



# CREDITS

Special thanks to all the people who made and released these awesome resources for free:

- ▶ Presentation template by [SlidesCarnival](#)
- ▶ Photographs by [Unsplash](#)

