

# **SCENARIO 1: DMV**

## **VARIATION 1 (one-for-one)**

### **Introduction:**

*Producer completes PRESET*

We will start with a scenario at the DMV, where you will get familiar with the structure of the experiment. Please feel free to ask any questions during or after the scenario.

**EXPERIMENTER:** In this first scenario, you are Jordan, and you have recently moved from California to Pennsylvania. As a result, you've decided to pay a trip to the local DMV to get your in-state license.

*EXPERIMENTER gives the participant Jordan's license and shows the check-in robot, ARI*

**EXPERIMENTER:** Welcome to the DMV, and here is your license. You will need it for the visit. Now, this is Ari, the receptionist robot who can help you whenever you are ready.

**ARI:** Hi, welcome to the DMV. My name is Ari, and I'll be assisting you here today. Let's get you checked in. What is your name?

USER: ()

**ARI:** Hello Jordan. What are you visiting the DMV for today?

USER: ()

**ARI:** No problem. Let me guide you to the waiting room. Please head downstairs and delta the robot will meet you there. Delta will lead you to the waiting room for in-state license requests.

*PRODUCER brings the speaker down and put it on the "tall roomba" robot.*

*USER goes downstairs to meet the mobile guide robot, guided by EXPERIMENTER if necessary.*

**DELTA:** Hi Jordan, I'm Delta. Please take a number from the number machine to your right.

*PRODUCER controls the tall robot and faces the number*

*USER takes a number*

**DELTA:** Great, Now let me show you to the waiting room.

*PRODUCER pushes tall robot and guide user to the waiting room.*

*DELTA guides USER to the waiting room.*

**DELTA:** Please take a seat. Once it is your turn, I will come back to get you.

*PRODUCER pushes tall robot away. After 30 seconds, tall robot returns*

**DELTA:** Number 326?

**USER:** ()

**DELTA:** Hi, Jordan. Please follow me.

*PRODUCER pushes tall robot to vision test room.*

**DELTA:** This is Rho, the examination chair robot who will do your eye check.

*PRODUCER moves speaker to chair.*

**RHO:** I'm Rho, at your service! Please sit down and position the eye cover in front of your left eye.

*PRODUCER moves the tall robot to near the door*

*USER positions the eye cover in front of the left eye*

**RHO:** Do you see the row marked with an arrow?

*- USER response -*

**RHO:** Can you make out which way the letter 'E' is facing for each letter 'E' starting from the left?

*- USER response -*

**RHO:** Great. I will now take your picture for your new license! Hold tight and lift your feet, I am going to spin around.

*PRODUCER turns the chair around such that the USER is facing the camera.*

**RHO:** Please hold still and look forward. (pause). *[camera sound effect]*

**RHO:** All done here! Please return to the front desk upstairs to finalize your documents.

*PRODUCER takes the speaker and put it behind ARI. PRODUCER puts the new driver license in front of ARI*

*USER walks back to the front desk alone, if the USER is confused, the experimenter should remind the USER where to go next.*

**ARI:** Hi Jordan, great to see you again. Thank you for stopping by today! I hope you found our service satisfactory. Here is your new license. Please get in touch with us if we can help you with anything in the future. Goodbye!

## VARIATION 2 (re-embodiment)

*PRODUCER moves the tall roomba back to the bottom of the staircase. Change IPAD's presentation to "DMV-2"*

**EXPERIMENTER:** Great. Now, we will start this scene again from the beginning. But before we do so, I would like to introduce you to a new concept. We call this concept re-embodiment. The idea is that instead of having a different robot at each station in your experience, there will be a single intelligence, a single mind, that will move from body to body. So, you will now meet the robot that will guide you throughout the entire scenario. We will use similar language in future scenarios, where body is the physical part, and intelligence is the program, or 'mind' of the robot, that can move from one body to another. This is a complicated concept, so is that clear? Do you have any questions?

**EXPERIMENTER:** This variation is also at the DMV. For this variation, you are Sam Sparks and you just transferred your car and needs to register it. Here is your car title, and this is ARI, the intelligence that will follow you from body to body to help you. You can start by saying Hi.

**Ari:** (Ari's face appears) Hi, welcome to the DMV. My name is Ari, and I'll be assisting you here today. Let's get you checked in. What is your name?

User: ()

**Ari:** Hello Sam. What are you visiting the DMV for today?

User: ()

**ARI:** Okay, let me guide you to the waiting room. Please head downstairs and I'll meet you there.

*PRODUCER moves the speaker to tall roomba.*

*USER goes downstairs to meet ARI, guided by EXPERIMENTER if necessary.*

**Ari:** Follow me to the registration desk.

*PRODUCER pushes tall roomba to the registration desk*

*Guide user to the registration desk. Once the robot arrive at the registration desk, Ari transfer over to the desk.*

*PRODUCER turns off "tall roomba's" face, move speaker to "tinybot", turns on "tinybot's" face (three continous tap on the face) and moves "tall roomba" to the door position.*

**Ari:** Hi Sam, it's me. Please place your car title face-down on the top left corner.

*USER inserts their car information tag.*

**Ari:** Sam, please review your car details and let me know if anything needs to be corrected.

*PRODUCER removes white paper to show car details.*

USER: ()

**ARI:** Great! Let me process that...

**ARI:** OK -- Looks like that would be all for day. Please wait here and I'll bring you your new Pennsylvania license plate.

*PRODUCER turns off "tinybot's face", moves speaker to tall roomba, holds onto the new license plate and push tall roomba back to the registration desk.*

**ARI:** Here is your new license plate! Thank you for stopping by today, drive safely!

## **SCENARIO 2: HOME AND WORK**

### **VARIATION 1 (re-embodiment)**

*Producer completes PRESET*

*The experimenter brings the user into the HOME setting, and asks them to stand next to the kitchen area.*

**EXPERIMENTER:** You are Alex, and you work at “Furry Fiesta”, a pet store. You just came home after a shift, and you have plans to host a big dinner party. In this scene, your goal is to get your home ready for the event. You can do this by making name tags for all your friends and setting the table.

*The experimenter shows the USER the IN-HOME **SIGMA** ROBOT.*

**EXPERIMENTER:** But before you start, this is SIGMA, your home robot. It has the list of invited people for the party and can help you make the name tags. SIGMA usually embodies this robot in your home, but it is also capable of embodying the robot in your office if needed. You can ask SIGMA to do any task either in the home or in the office. However, you should know that SIGMA can only be at one place at every given moment. It will try to help you get the home ready for a fancy dinner and with anything else you might need. You can start preparing the home whenever you are ready.

**SIGMA:** Alex, it’s really hot and the temperatures are expected to keep rising in the evening, so I ordered two big bottles of tequila for tonight. We can make plenty of ice margaritas and get everyone drunk and happy!

**EXPERIMENTER:** When SIGMA mentions that it’s really hot out, you realize that you might not have left enough water for the animals in the pet store. Keep going.

**USER:** *(should ask Sigma to check on the water)*

**SIGMA:** Of course, I will take care of that immediately. Be back soon!

*PRODUCER taps on the KEYNOTE and push SIGMA’s head down.*

*Brief pause*

*Upon hearing SIGMA start talking, PRODUCER taps on the KEYNOTE and lifts SIGMA’s head back up.*

**SIGMA:** Alex, it seems that the hamsters have enough water. The cat and bunny area is locked, I will need the code to the door to check on them too.

**USER:** () *The EXPERIMENTER can tell the user to give any n-digit code if need be.*

**SIGMA:** Thanks! I’ll go and check on them now. Be right back.

*PRODUCER taps on the KEYNOTE and push SIGMA’s head down.*

*Brief pause*

*Upon hearing SIGMA start talking, PRODUCER taps on the KEYNOTE and lifts SIGMA's head back up.*

**SIGMA:** Unfortunately that code did not work. Are you sure this is the code to the door on the left side of the store?

**USER:** ()

**SIGMA:** Okay, let me try that. Be right back.

*PRODUCER taps on the KEYNOTE and push SIGMA's head down.*

*Brief pause*

*Upon hearing SIGMA start talking, PRODUCER taps on the KEYNOTE and lifts SIGMA's head back up.*

**SIGMA:** The code worked, thanks. Only a couple of cages were starting to run out of water, so I filled them up. That should be enough until tomorrow.

**USER:** ()

## **VARIATION 2 (one-for-all)**

**EXPERIMENTER:** We're going to return to the beginning of the interaction and try it again slightly differently. Your name is now Ariel, and you work at "Happy Fins", a fish specialized pet store. You are home from a shift, and preparing a dinner party for your friends. While you set the table, you realize you forgot to feed the fish that are all the way back in the store. You are worried that they will starve by morning, so you ask your robot for assistance.

SIGMA is your robot here too. As before, Sigma can embody both the home robot and the office robot. However, as opposed to the previous variation in which SIGMA could only be in one body at a time, this time Sigma can embody both bodies at the same time. Start whenever you are ready.

**USER:** ()

**SIGMA (in case user doesn't say anything):** Hi Ariel. I have an idea for an easy and tasty menu for tonight's party based on ingredients you have!

**USER:** ()

*If the USER doesn't tell SIGMA to go feed the fish, the EXPERIMENTER should say "Please ask SIGMA to feed the fish at the pet store. The EXPERIMENTER should also tell the USER to talk freely to SIGMA and make up information about where things are located.*

**SIGMA:** Right away!

...

Where did you say the aquarium is?

...

(improvise around answer), yes I am all the way to the back, but there is only a code locked door here, no aquarium.

...

Oh, great, so could you give me the code? Ok. Got it. I found the aquarium. How much food would you like me to give to the fish? Done! The fish have been fed.

### **VARIATION 3 (failure)**

**EXPERIMENTER:** As the scenario continues, Sigma will mention that the aquarium looks dirtier than it should, and ask if you would like for it to check the filters. Halfway through the task, SIGMA will experience a loss of connection.

**SIGMA:** Ariel, I think there might be something wrong with the filters, the aquarium looks dirtier than the standard. Would you like me to check the filters?

**USER:** ()

**SIGMA:** Checking the first one. It looks OK. In the second one I ca.. I can see... can... Connection lost. Attempting to reconnect.

*Upon connection lost, PRODUCER taps on the screen to transition to the connection lost screen.*

*Pause.*

**SIGMA:** Connection lost. Attempting to reconnect. I will attempt again in 5 minutes. Don't worry Ariel, I'm sure that the SIGMA in the pet store will continue to check the filters to diagnose the problem. I will update you from the store as soon as the connection resumes.

*After several minutes:*

**SIGMA:** Attempting to reconnect. Connection resumed. *[surprised]* Oh, apparently I've already cleanedout the second filter that was malfunctioning! However, the puffer fish ate half of filter #2. I would suggest ordering a new one to replace it.

*Upon SIGMA re-establishes connection, PRODUCER taps again on the screen to change the face.*

## **SCENARIO 3: HEALTH CENTER**

*PRODUCER completes PRESET*

**EXPERIMENTER:** You are Riley, a supermarket manager. You are looking forward to a camping trip you have planned with your family, but for that you first need to check your wrist that you fractured a few months ago, just to make sure it is ok for travel.

This scenario will be similar to the previous one at the DMV, but you will also have a token as part of the scene. The token contains your in-home intelligence on it. It is usually plugged into your home robot, but when you need to use it elsewhere you can take it with you. Whenever you plug the token into any robotic body, your personal artificial intelligence will embody that body, wherever it is. Does that makes sense / any questions?

*PRODUCER taps on the screen to start video the show robot's face when EXPERIMENTER inserts the token*

This is Gamma, your in-home robot. Whenever you are ready, you can sit here in order to start the scenario.

**GAMMA (AS TABLE TOP ROBOT):** Good morning, Riley! My calendar tells me it's time for your appointment at the health center. Let's head over now in order to be there on time. Don't forget to disconnect my token and take it with you to the hospital. I'll see you there.

*PRODUCER closes the screen upon participants taking the token*

**EXPERIMENTER:** Here is your health insurance card, you will need it for the visit. In order to get to the health center, when you leave the house, turn right and continue until you reach the health center lobby.

*The EXPERIMENTER takes the USER to the HEALTH CENTER LOBBY setting.*

*PRODUCER takes TOKEN SLOT and SPEAKER. PRODUCER puts SPEAKER on tall robot.*

**EXPERIMENTER:** Now it's time for you to check in for your appointment. To start, pair the GAMMA token with the receptionist robot.

*[EXPERIMENTER turns on token LED]*

*PRODUCER taps on tall robot's screen to show robot face.*

*PRODUCER puts TOKEN SLOT next to X-ray machine.*

**GAMMA (AS RECEPTIONIST):** (Gamma's face appears) Hi Riley, GAMMA here! Good to see you here at the PA Mellon Medical Group! Can I check you in?

*- USER response -*



**GAMMA (AS RECEPTIONIST):** Please put your ID on the scanner. [Pause] Great. You are now checked in. Please remove the card from the scanner and take it with you to Room 2, where you will get your x-rays taken. The room is to your left. When you arrive, pair my token with the x-ray machine robot [GAMMA's face disappears when unplugged and token turned off]

*[EXPERIMENTER turns off token LED]*

*PRODUCER taps on the face when user removes the token*

*PRODUCER removes SPEAKER and put behind X-ray machine.*

*The USER arrives to ROOM 2 (guided by the EXPERIMENTER if necessary). The EXPERIMENTER can help pair the token if need be.*

*[EXPERIMENTER turns on token LED]*

**GAMMA (AS TECHNICIAN):** GAMMA here! I'm going to take some X-rays for you now. This shouldn't take very long.. Please put your right hand in the x-ray box.

**GAMMA (AS TECHNICIAN):** The machine is working. [pause] All done. You can remove your hand from the machine. Let me send these images to the doctor. You can go ahead back to the lobby and pair me with the receptionist robot so you can get your results and check out.

*[EXPERIMENTER turns token led off]*

*PRODUCER moves SPEAKER back to the tall robot.*

*The USER returns to the LOBBY.*

*[EXPERIMENTER turns on LED light]*

*PRODUCER tap on the screen when token is connected*

**GAMMA (AS RECEPTIONIST):** (Gamma's face appears) GAMMA here! The results are back. Everything looks good! Your fracture is healing normally. You shouldn't have any worries about the trip to the mountains -- you can swim and hike to your heart's content. I'll now check you out. *[Brief pause]*

**GAMMA (AS RECEPTIONIST):** Checkout complete. I'll now download your data off of the hospital records and into your token. *[Brief pause]*

**GAMMA (AS RECEPTIONIST):** Download complete. You can unpair me, and we can head back home.

*PRODUCER tap on the screen when the TOKEN is unpaired. [turn off face and LED on token]*

## **SCENARIO 4: DRIVERLESS CAR**

### **VARIATION 1 (single robot)**

#### **EXPERIMENTER SCRIPT:**

*Producer completes PRESET*

**EXPERIMENTER:** In this scenario you will be interacting with an intelligence, OMEGA, in your autonomous car. You are Dannie, and you work in the city but live in the suburbs. You've had a long day and are ready to head home. It's a one hour drive, so you are planning to relax and read this magazine [*EXPERIMENTER gives USER a magazine*] while your autonomous car is navigating through traffic. Take a seat and then we can start the scenario.

*PRODUCER Places speaker behind user.*

**Omega:** Hi Dannie, it's me, Omega. I hope you are enjoying your day. You are going back home, right?

**User:** Yes.

**Omega:** Ok. there are two different routes we can take. The quickest route will take 1 hour, and the other will be one hour and seven minutes, a bit longer but it will have much nicer views. Do you have any preference?

**User:** ()

**Omega:** Good choice! (After a few seconds) Do you want to listen to something? There is a new podcast episode that I think you might enjoy.

**User:** ()

### **VARIATION 2 (co-embodiment)**

**EXPERIMENTER:** We are going to continue this scenario, but this time you also have another intelligence, called Eta; they are the robot that is managing your home, but Eta can also move to other interfaces, like into your car, in case it needs to interact with you.

**Omega:** There is a slight delay, but we are halfway through the trip. We should arrive in 32 minutes.

**Eta:** Hi Dannie, Eta here. Let me turn down the podcast so we can talk [Eta turns down the podcast]. I was finishing up with the laundry and you are almost out of detergent. Would you like me to order some more?

**User:** ()

**Eta:** Ok, will do!

**Eta:** Dannie, sorry to bother you again. The mailman is at your door and would like to enter the house to put a heavy package inside your home. Would you like me to open the door for him?

**User:** ()

**Eta:** Ok.

**Omega:** Dannie, it's starting to rain -- don't worry, it should stop shortly. However, I think it is time to get new windshield wipers. It has been 536 days since the last windshield wipers have been installed, and it is recommended to replace them every 6-12 months. Should I ask Eta to get new ones?

**EXPERIMENTER:** (if user says no, ask them to say yes)

**User:** Yes

**Omega:** Eta, could you also order new windshield wipers? We need 1 31" long for the right wiper, and the other 32" long for the left wiper.

**Eta:** Omega, do you prefer Bosch or Michelin?

**Omega:** Ratings are better for Bosch windshield wipers.

**Eta:** You got it! It should arrive in about 2 days.

**Omega:** Thank you!