

Experimenter Tutorial Script

Participant Setup

1. Give them the consent form to read and sign. After, ask if they have any questions.
2. Tell the robot the task: “Today you will be collaborating with the robot to perform a series of household tasks. To do this, you will be giving verbal commands to the robot, that the robot will then execute”
3. Show them the objects in the scene.
 - a. “For these tasks, the robot will need to interact with this group of objects – Cheezit, Pringles, Glass, Cup, Bottle, Mustard and Sponge.”
 - b. You can refer to these objects by name, or general terms such as food or drinking container.
4. Show them the surfaces.
 - a. “The objects can be placed on any of the locations in the scene. The Table, Dish area, Bottom shelf, and Middle shelf, or zone that we will describe later”
 - b. “The side table by you can be used to keep objects on, but the robot cannot reach those. Fetch can only pick and place objects within the orange line.”
5. Ask them if they have questions about the objects and the scene
6. Tell them about the actions Fetch can do -
 - a. “Fetch knows how to perform multiple actions. It can use these actions to interact with the objects and with you. It can move objects by picking and placing them. It can wipe the table, or it can pour contents from the glass.”
7. Ask them if they have any questions about the robot and the actions it can do
8. Tell the participant: “Once we are done with the experiment, we have a short survey form for you to complete and an interview for us to ask you about your experience working with this system. Do you have any questions about anything so far?”
9. Show them the hololens
 - a. “For this study, you will be wearing this Augmented Reality head mounted display while interacting with the system”

- b. “While wearing the HMD, you will see some virtual elements overlaid on the real scene, and a display that provides feedback during the programming process.”

Tutorial

1. Do training task setup
 - a. CheezIt and Pringles on middle shelf
 - b. Mustard on side table
 - c. Cup in pour spot
 - d. Glass in pour zone
 - e. Everything else on dish area
2. Turn on the video recording
3. Have users put on headset and hit holographic remoting
4. Tell the **NOT** to calibrate for their eyes
5. Press play on Unity once they are in
6. “During the experiment feel free to move around, but try to stay close to this microphone when you give speech commands to Fetch”
7. “For the first part of the experiment, I will give you a series of things to do to help familiarize you with the programming process. So please follow my directions.”
8. Do training tasks.
9. **Task 1: One-time rule**
 - a. First, we will create a one-time rule. This command will execute fully only one time before being automatically deleted.
 - b. To command the robot, wait for the progress bar on the display to start on the left side, then say the key word “hey fetch,” followed by a command before the progress bar ends.
 - c. If the heard command is not displayed, try saying the command louder, towards the microphone.
 - d. “Command the robot to move the food from the shelf to the dish area”
 - e. If you are satisfied with the description output, you can say approve. But, instead of saying approve, lets add some feedback.
 - f. Waiting for the progress bar, say “hey fetch, actually, move it to the table” This will add the feedback to the previous command, and recompute the plan.

- g. Now, say approve once prompted.
- h. Let the participant complete the task and wait for Fetch execution to complete

10. Task 2: Repetitive Rule with Time and Zone

- a. Next, we will create a repetitive rule, that can be executed multiple times when triggered, and can only be deleted by the user.
- b. "Create a new zone by saying "spawn zone"
- c. To move the zone, pinch and hold the middle of the zone with your pointer finger and thumb
- d. (SHOW FINGER MOTION) To resize or rotate the zone, quickly pinch and open your two fingers in the middle of the zone. You can resize the zone by pinch holding the corners, and rotate by pinch holding the vertical edges.
- e. Place the zone around the food that Fetch just put on the table
- f. Looking at the progress bar, and saying the hey fetch keyword, command the robot to perform a repetitive rule by saying a conditional statement such as, "If any object has been in the zone for 10 seconds, move it to the middle shelf."
- g. After the pringles and cheezits are placed on the middle shelf, add the mustard to the zone.
- h. Let the participant complete the task and wait for Fetch execution to complete
- i. You do not need to combine time and zones, they can also be commanded individually.
- j. For example, the previous task with just the zone trigger could have been, move any object that is in the zone to the middle shelf.
- k. And with the time trigger, after 10 seconds, move the objects to the shelf.
- l. If a rule is running but not doing anything, perhaps the rule is not doing what you expected. This means you may need to look at the rule, or delete a rule to make a new one.
- m. If you want to see what rules are running, look at the menu and say, show rules
- n. Then if you want to see the rule description, say, information
- o. Then click the rule you would like the information on.
- p. If you want to delete a rule, say, delete rules, then click the rule you wish to delete.

- q. Now say hide rules to go back to the main screen.
 - r. Do you have any questions?
11. "Congratulations on completing these tasks. Please give me a minute."

Experiment

12. Setup for scenario 1
- a. Glass in pour area with beads
 - b. Bottle on dish area
 - c. Sponge on table
 - d. Food on middle shelf
13. "The next task is a scenario in which you will have to work with the robot. Here is a paper explaining the scenario. Please follow the instructions written on it to complete the task. Other than the instructions mentioned, you are free to complete the scenario however you see fit. You can begin whenever you have understood the scenario and are ready."
14. Hand them **scenario 1 sheet (20 Min)**
15. "There is one special area, the **food storage area**. Food must be placed in this area, while dishes must be placed on the bottom shelf." The robot does not know where the food storage area is, so you will need to specify this for the robot.
16. Now we will give you this scenario, you can complete it however you'd like.
17. Let them work on completing scenario 1. Answer any questions but don't give instructions on how to complete something.
18. "Congratulations on completing the scenario task. Please give me a minute."
19. Setup for scenario 2
- a. Cup, Glass, Cheezit, and pringles on side table.
 - b. Bottle on far left bottom shelf
 - c. sponge on dish area
 - d. mustard on far left of middle shelf
20. "The next task is another scenario in which you will have to work with the robot. Here is a paper explaining the scenario. Please follow the instructions written on it to complete the task. Other than the instructions mentioned, you are free to complete the scenario however you see fit. As a reminder, any item being poured out from must be placed facing you, in

this location. You can begin whenever you have understood the scenario and are ready.”

21. Hand them **scenario 2 sheet (20 min)**
22. Let them work on completing scenario 2. Answer any questions but don't give instructions on how to complete something.
23. “Congratulations on completing the scenario task. Please give me a minute.”
24. Setup for scenario 3
 - a. Pringles with the user
 - b. All other objects on the middle shelf
25. Explain **scenario 3 (10 min)**
26. Let them work on scenario 3
27. “Congratulations on completing the scenario task. That concludes the experiment! Congratulations! You can take off the headset.”
28. “Next we have a survey form for you to answer some questions about your experience. After that we will close things out with a short interview”
29. Turn off camera recording. **Save both recordings.**
30. Open the survey link
31. Fill out first page
32. Instruct the participant to fill out the **survey**
33. Connect hololens to charger
- 34. Backup both recordings**
35. When they are done, perform the **interview**
36. Tell them how and when they will receive the gift card
37. Thank them and send them on their way (ask if they need directions out of the building)