Robotics 340: Human Evaluation of Robot Systems
Winter 2025

Lab Title: Group dynamics with a robot

Submission Link: Lab 3 Submission Template

Submission Type: Individual

Learning Objectives:
1. Understand the nuances present in group dynamics
2. Investigate how a robot interfaces with human group dynamics
3. See how a robot may be limited in its ability to alter group dynamics

Introduction:
In this lab, you and your group will pick a role playing scenario. Most members will be assigned personalities and roles, while one member will be the robot. Using speakers, you will role-play a scenario where the robot interacts with the group and attempts to change the dynamics

Part 1: Scenario and Role Assignments (5 minutes)

1. For this lab activity, you and your group will complete a role-playing scenario, with one person role-playing as a robot. Below is a list of possible scenarios you may role play in. Discuss with your group briefly which scenario you'd like to choose, or if you have your own idea, you may use that as well!
2. **Note: If you have more or less than 5 people in your group, you may shuffle the roles as needed. Just make sure one person is acting as the robot!**
    a. Faculty Department Meeting (try to select a department other than engineering!)
        i. Human roles: Two faculty members, one staff member, one student representative
        ii. Robot role: Robot acting as Department Chair
    b. Lawyer settlement
        i. Human Roles: Two lawyers, two victims
        ii. Robot role: One conflict-mitigating robot
    c. Coffee Shop
        i. Human roles: One barista, two customers, one bystander
        ii. Robot role: One robot instigating conflict
    d. Emergency
        i. Human Roles: Two paramedics, one victim, one human bystander instigating conflict
        ii. Robot role: Open role
3. Once your group has decided on a **scenario**, each group member playing a human will be given **roles**. Refer to the list above for each; make note that only **one** person will be taking the role of the robot, **which will be limited to specific voice lines rather than free to improv**. After roles are decided, each team member playing a **human** will be given personalities to guide their behavior during the scenario. Only one personality may be assigned to each person.
    a. Grumpy
    b. Bubbly
    c. Child-like
    d. Quiet

    The person role-playing the robot may choose their behavior based on the needs of the scenario, and does not need a personality from the list above.

Deliverable: Write down what scenario your group chose, and which group member received which role and personality.

Part 2: Voice Lines (15 minutes)

1. Once all roles and personalities have been assigned, the group must then brainstorm voice lines for the robot. Each group will have four voice-recording buttons that the robot will use—these are the only methods of communication the robot has with the group members. The robot may gesture, but may not speak otherwise, so be sure to come up with clever enough voice lines for the robot to say! Try to make each line only 3-5 seconds long.

2. Once your group has finished writing your voice lines, record these clips into the buttons for playback. Press and hold the button on the bottom to record your message. Any group member can do this, but be sure to test the sound afterwards.
    a. Note: The playback of the voice recording is quite loud. Be aware of this when testing your recordings.
3. After your voice lines have been recorded, sketch on a piece of paper what you imagine the robot embodiment to be. Think about what role the robot is playing, and how that may influence what your group thinks the robot looks like.

Deliverable: Write the dialogue your group recorded for each button, briefly explain why you chose them, and take a photo of your drawing.

Part 3: Rehearsal and performance (40 minutes)

1. After the robot performer has all of their lines, feel free to rehearse your scenario for a bit. Try to be sure each group member is included during the performance, and be creative for how interactions may go! Your performance should be only about 60 seconds.
2. Once all groups have rehearsed and are ready to perform their scenarios, each team will present their performance to the rest of the class. While observing other groups, think about the different ways the robot interfaces with the human group dynamics, how simple or difficult it is for the robot to guide the conversation, and what challenges are present in this specific scenario that make things harder for the robot.

Deliverable:

1. Comment on your performance as a whole, based on your own thoughts as well as the feedback from the class. Be sure to take notes.

2. Comment on at least one other group's performance. Describe what is their scenario/roles, and please comment on your thoughts on the group dynamics/interactions.

Part 4: Discussion (20 minutes)

Deliverable: Answer the discussion questions individually. You may discuss with your group.

1. How does your perception of your performance differ from your peer's perception of your performance if at all?
2. How did you feel the robot altered your own dynamics? And if you were the robot, how did you feel others changed your behavior?
3. How frequently did people pay attention/defer to the robot during the role-playing? Think about your performance and also other group's performances.
4. Do you think humans will likely ignore a robot in a group setting (especially if the robot's opinion differs from the humans') or are they more likely to pay attention to it? Why or why not?
5. How can we design a robot that will not be overlooked in human social settings? Does your imagined embodiment align with your answers here? What did you learn in this lab that would be helpful to discuss in this robot design?
6. What kinds of power dynamics did you notice across the different scenarios? How do humans perceive robots that have more influential roles in society? (e.g., robot as department chair) What strategies can roboticists take in social robot design to promote open communication and address power dynamics present in group scenarios?
7. In group or community settings, what roles should robots take? Based on your experiences in this lab activity, how do you think robotic embodiments are going to alter the dynamic of group interactions on larger scales?