

Homework 1: Generating Project Ideas

16-467: Human-Robot Interaction

Homework #1; Out January 25; Due February 3

For the end-of-term project, you will run a human-robot interaction study that investigates how changing an aspect of the robot (e.g., appearance, expression, voice, behavior, proxemics) will affect how people interact with the robot. In particular, the study will investigate how people behave towards the robot along one of the following dimensions:

trust (e.g., will the person be persuaded to do things they normally would not do)

empathy (e.g., will the person help the robot)

reliability (e.g., will the person believe the robot is capable of doing certain things)

For this first team homework (we will form teams on Monday 25 January), you will generate three different ideas for conducting the study, one for each of the themes above. Your team should first conduct a reasonable search of the literature in human-robot interaction for each of the themes, in order to better understand them and to design your own study using as much background information as possible. As you see below, part of the deliverables includes reading at least three published articles (at least one per theme) that you can use as a guidepost to define key areas of inquiry related to the themes. All of your team members should read these articles, so that you can establish common ground moving forward.

Your second team task for Homework 1 involves team-level brainstorming of possible research questions and discussion until you can identify three strong HRI research questions, one per theme, each of which would be appropriate to serve as your team project. Note that research questions are the key questions you wish to answer and should not be influenced with early commitments to *how* you will attempt to answer the questions. For example, if your team were to pick the empathy theme, you could decide that you are interested in how the sophistication of the language used by the robot affects people's willingness to help the robot out of an embarrassing situation. Note that this is a specific research question, but does not define what the situation will be or what the robot will be doing.

Homework Deliverables

You will turn in a written report on behalf of your team. For *each* of the three themes (trust, empathy, reliability), the written report should include:

- Citations for the article(s) that your team read about the theme, along with a ½ page summary of the article(s), including its hypothesis, methodology and major findings.
- An HRI research question that your team is considering for that theme. The description should be at least one page (single spaced) and should succinctly describe the question and justify its relevance to current and future HRI efforts. Specifically, identify how your research question relates to state of the art research by explaining the relationship between your question and the issues/hypotheses posed in the cited article(s). Also, describe what variable(s) (e.g., appearance, expression, voice, behavior, proxemics) your study will investigate. Be concrete and specific.

Thus, your full report will be at least 5.5 pages (1.5 pages for each of the three themes).

You will also present your possible research questions. You will present, with slides, in class for 5 minutes as a team (each team member must participate), and then there will be 10 minutes of interactive Q&A with the entire class discussing your ideas and justifications. In class, we will endeavor to provide guidance to each team so that they can begin the process of refining and narrowing down possible team projects.