Social Robot Design Research

Last Updated: Fri, 11/14/2025

Course prefix: ID

Course number: 8803

Section: SRD

CRN (you may add up to five):
93562

Instructor First Name: Yixiao

Instructor Last Name: Wang

Semester: Fall

Academic year: 2025

Course description:

This course focuses on the human-centered design, engineering, and evaluation of social robots through a variety of interaction design and behavioral research techniques. **The course framework is rooted in Human-Robot Interaction (HRI)**, **an interdisciplinary field investigating how robots interact with people in a social world.** Please note that "robot" here is a broad concept referring to cyber-physical artifacts with a certain level of autonomy (e.g., capable of physical movements or reconfigurations or both), including non-humanoids, robotic furnishings, cyber-physical installations/spaces, and many more. **Thus, we strongly encourage multidisciplinary collaborations in group projects.** Students will go through a variety of in-class and after-class activities to grasp the essence of the HRI design and research methods that will be introduced during the class. These methods can also pave a solid path for students who would like to pursue future careers related to HCI, HRI, UX, or IxD no matter in industry or academia. **Please click the links below to see previous student works:** Bendy Robot (ID 8803), FastTrack Robot (ID 8803), Medi-Ball (ID 8803), and Hooky Robot (ID 8803). Finally, for Spring 2026, we will collaborate with the "Robert C. Williams Museum of Papermaking" for the design projects.

Course learning outcomes:

On successful completion of the course, students should be able to demonstrate:

- Development and demo of partially functional skeleton prototypes and a high-fi prototype (functional enough to make a vivid and convincing project video).
- Development and delivery of a final report that is logically sound, contently convincing, structurally clear, and well written (examples and templates will be given

in the class).
- Development and delivery of a design diary that detailly records the design process, research process, and decision-making process (examples and templates will be given in the class).
- Development and delivery of a project video that clearly and vividly describes the project, and interaction videos/GIFs for the purpose of online/in-person user studies (examples will be given in the class).
- Development and delivery of a design portfolio that sells your project convincingly to your future employers and reviewers **(for the group with more people only)**.

Required course materials:

All learning resources will be provided through online materials and the course website.

Textbook and required readings:

- Bartneck, Christoph, Tony Belpaeme, Friederike Eyssel, Takayuki Kanda, Merel Keijsers, and Selma Šabanović. "Human-robot interaction: An introduction." Cambridge University Press, 2020. Chapter 1, 2, 4, 5, 6, 8 ~ 12.

  Textbook Available Online: https://www.human-robot-interaction.org/

- Hoffman, Guy, and Wendy Ju. "Designing robots with movement in mind." Journal of Human-Robot Interaction 3, no. 1 (2014): 91-122.
- Rosson, Mary Beth, and John M. Carroll. (2009) "Scenario-based design." Human-computer interaction. *boca raton*, FL (2009): 145-162.
- Kerlinger, F. & Lee, H. (2000). Foundations of behavioral research, 4th ed. New York: Harcourt. Chapter 1, 2, and 3.

Grading policy:

For students, the course grade is composed of the following key elements: (1) Skeleton Prototype, (2) High-fi Prototype, (3) Design Diary, (4) Final Report, (5) Mid-term and Final presentations (6) Project video & interaction videos (7) Individual Focus (8) Extra Credits. The points of each element and submission weeks are outlined in the table below.

For the group with more people:

Skeleton prototype: 15 pts

Final report: 20 pts

Design Diary: 10 pts

Project video: 10 pts

Mid-term & Final Presentation: 20 pts

Peer Review: 10 pts

*** High-fi Prototype: 10 pts**

Design Portfolio: 5 pts

For the group with fewer people:

Skeleton prototype: 15 pts

Final report: 20 pts

Design Diary: 10 pts

Project video: 10 pts

Mid-term & Final Presentation: 20 pts

Peer Review: 10 pts

*** High-fi Prototype: 10 pts**

* *For the high-fi prototype, it should be 90% done by Wk12-C2 so that project videos can be finished by Wk13-C2. However, after that, you could keep improving it until Wk 15 when the final presentation happens. It is through the final presentation (where you need to demo your high-fi prototype) and your final submission of money shots that your high-fi prototype is graded.*

Apart from the grading criteria above, **we have 2 bonus (extra) points** for seminar discussion participation. Students are supposed to read the required readings before the class and contribute constructive and substantive questions or responses during the discussion.

The total points will be converted into a percentage and rounded off. Students will receive letter grades **without** pluses and minuses. Students' final grade does not need to fit into a normal distribution curve: if everyone is doing super great, then everyone could get an A. Below is an exemplary grading scale:

A: **90-100%**

B: 80-89.99%

C: 70-79.99%

D: 60-69.99%

F: < 60%

To clarify, this grading scale should conform to GA Tech’s grading rule:

A: Excellent. It means extremely good, outstanding, and usually surpasses my expectations

B: Good. It means you have done solid work that meets my expectations

C: Satisfactory. It means mediocre jobs that do not meet my expectations but are still acceptable.

D: Passing. It means an unsatisfactory passing grade, but you still earn credit for this class

F: Failure. It means not submitting most of the deliverables, skipping most of the classes, not being present in most of the presentations, etc. You will NOT earn credit for this class

Extra Credit and Grade Dispute Policies and Procedures

Presenting “Seminar Discussion” offers 2 points of extra credit. The grade of each assignment on Canvas will be released on Canvas. **Students should email the instructor within 4 days of the grades being posted (including holidays) if they have any questions about the grade. After 4 days, no grade disputes will be accepted.**

Attendance policy:

You are expected to attend each class from week 1 to week 15, and attendance will be taken by the TA or the instructor during the class occasionally. If there is something urgent happens (e.g., family emergency, illness, job interviews, etc.), you should email **BOTH the instructor and the TA** about the situation **the day BEFORE the class**. Any **UNEXCUSED** absence will result in a final grade deduction:

Number of Unexcused Absence: 1 --------- Point deduction from the final grade: 0

Number of Unexcused Absence: 2 --------- Point deduction from the final grade: 1

Number of Unexcused Absence: 3 --------- Point deduction from the final grade: 2

Number of Unexcused Absence: 4 --------- Point deduction from the final grade: 5

Number of Unexcused Absence: >= 5 --------- Point deduction from the final grade: 10

Academic honesty/integrity statement:

Students are expected to maintain the highest standards of academic integrity. All work submitted must be original and properly cited. Plagiarism, cheating, or any form of academic dishonesty will result in immediate consequences as outlined in the university's academic integrity policy.

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit https://policylibrary.gatech.edu/student-life/academic-honor-code

Any student suspected of cheating or plagiarizing on a quiz, exam, assignment, or deliverable will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.