

Introduction to Human-Robot Interaction

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Prerequisites: Instructor Consent. COMP 3020 and COMP 4020 (or equivalents) are strongly recommended.

Lecture Times and Location: TBA. There will be two 1.5 hour classes per week

Textbook: There will be no textbook required. Course reading material will be provided by the professor as PDFs, consisting mainly of research papers and book chapters.

Introduction: As the field of robotics continues to rapidly advance, people are increasingly finding themselves interacting with robots at work, in public spaces such as hospitals and museums, and even in their homes. As this happens, it is important to consider how people and robots will communicate, and how people will issue commands or extract data. Robots pose unique challenges in comparison to the more familiar interfaces of PCs and hand-held devices: robots often have limited display space, move dynamically about an environment, and often cannot assume they are collocated with users. As such, interaction often includes a mixture of modalities such as gestures, speech, control interfaces, and even human-like facial expressions. In this course, students will learn about interaction design challenges specific to robots and emerging methods for understanding and approaching human-robot interaction design.

Concepts and Topic Areas:

Remote-Control Robotics	Robots as Social Actors
Collocated Robot Control	Domestic Robots
Low-Fidelity HRI Prototyping	Sociology of Human-Robot Interaction
Anthropomorphism	Evaluation in Human-Robot Interaction
Android Science, and the Uncanny Valley	Ethics of Human-Robot Interaction

Class Format: This is a seminar-style course based on presentations and round-table discussions. The general course outline will include both professor-given lectures, and regular paper presentations by students. Students will be expected to read 3-5 papers per week for preparation and submit critical reviews of select papers. Students will also complete a technical project (tentatively in groups), robotic platforms TBA, and written take-home midterm and final papers (not extensive, ~10 double spaced pages each).

Grading:

Class Participation: 10%
Presentations: 10%
Reading Summaries: 10%
Final Paper: 40% (to be split over 5 deadlines)
Final Project: 30%

Cross Listing: If the course is deemed suitable for cross listing (given a shortage of senior undergraduate courses), the undergraduate marking scheme would be as below. Undergraduates would not complete the final paper and would have lower reading requirements (roughly half, but at least one short paper review per week). The class participation (discussions), presentations, and summaries would be worth more than for the graduate students, given that their lack of research experience would likely make these components more difficult for them.

Class Participation: 15%
Presentations: 15%
Reading Summaries: 20%
Mid-Term Paper: 20%

Final Project: 30%