

Introduction to Human-Robot Interaction

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Prerequisites: 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 about 5 papers per week for preparation and to join in critical discussions. Students will also complete a technical project (in groups), robotic platforms TBA, that will include an extensive written paper. Students will also review each other's work. There will be multiple-choice midterm and final exams on basic concepts from the papers assigned. While these exams are not a large component of the course, you **MUST** pass the midterm and final to pass the course.

Grading:

Class Participation: 10%
Presentations: 15%
Reviews: 5%
Midterm Exam: 10%
Midterm paper: 20%
Final Project: 30%
Final Exam: 10%
Bonus: Stats quiz: 2%