

Introduction to Human-Robot Interaction (HRI)

EE P 500 C Sp 26: Graduate Seminar

Where: ECE 003

When: Wednesdays from 4:30pm to 6:20pm

Instructor: Prof. John G. Raiti (jraiti@uw.edu)

Grader: Jonathan Lu (jonatl5@uw.edu)

Summary:

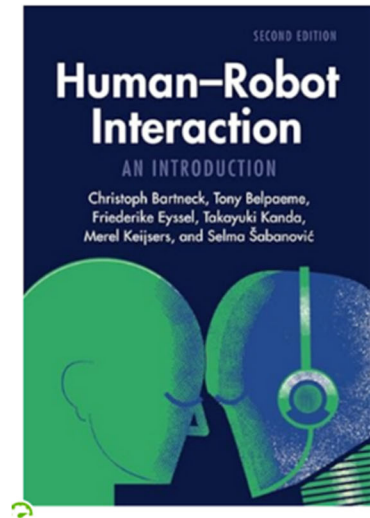
This seminar introduces students to foundational theories, methods, and emerging research in Human–Robot Interaction (HRI). The course examines how humans perceive, interact with, and collaborate with robots across social, industrial, healthcare, and everyday contexts. Topics span human factors, cognitive models, sensing and perception, interaction modalities, autonomy and transparency, evaluation methods, and ethical and societal implications. Through readings, discussions, short response assignments, and a final project, students will critically engage with contemporary HRI research and design challenges.

Course Objective:

By the end of this course, students will be able to:

1. Describe core concepts and historical foundations of HRI.
2. Analyze how cognitive, perceptual, and social factors shape human–robot interaction.
3. Compare and evaluate different interaction modalities (speech, gesture, haptics, embodiment, etc.).
4. Critically assess autonomy, transparency, and control tradeoffs in robotic systems.
5. Apply established HRI evaluation methods to real-world scenarios.
6. Discuss ethical, cultural, and policy considerations related to robotics

Textbook:



Human-Robot Interaction 2nd Edition

by [Christoph Bartneck](#) (Author)

5.0 ★★★★★ (1)

The role of robots in society keeps expanding and diversifying, bringing with it a host of issues surrounding the relationship between robots and humans. This introduction to human-robot interaction (HRI) by leading researchers in this developing field is the first to provide a broad overview of the multidisciplinary topics central to modern HRI research. Written for students and researchers from robotics, artificial intelligence, psychology, sociology, and design, it presents the basics of how robots work, how to design them, and how to evaluate their performance. Self-contained chapters discuss a wide range of topics, including speech and language, nonverbal communication, and processing emotions, plus an array of applications and the ethical issues surrounding them. This revised and expanded second edition includes a new chapter on how people perceive robots, coverage of recent developments in robotic hardware, software, and artificial intelligence, and exercises for readers to test their knowledge.

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ISBN-13



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Edition

#

2nd

Publication date



June 27, 2024

Language



English



Schedule:

Week	Date	Topic	In-class Assignment	Reading and Homework
1	4/1/26	- Course Intro - What is HRI?	Team formation and Team charter	- Chapters 2 and 3 "What is a robot?" assignment
2	4/8/26	How a robot works	Define Problem Statement and Identification of Intended User(s)	Chapter 4, 5
3	4/15/26	- Design feedback loops with intended users in HRI - Robot Manipulation - Interaction: Spatial, Non-verbal, Verbal	Revisions to Problem Statement and Identification of Intended User(s)	Chapters 6, 7, 8
4	4/22/26	- Emotion and Social Interaction - Research Methods in HRI - Systems Integration	H->R and R->H Interactions	Chapters 9, 10, 11
5	4/29/26	Mid-Quarter Presentations on Final Project		
6	5/6/26	Guest Talk: Medical Robotics - Haonan Peng	Work on Final Project	TBD
7	5/13/26	Guest Talk: James Muir (Amazon Leo, TerraClear)	Work on Final Project	TBD
8	5/20/26	Guest Talk: Taylor Faulkner Kessler (UW CSE)	Work on Final Project	TBD
9	5/27/26	Guest Talk: Jeff Gorges (Aigen Robotics)	Work on Final Project	TBD
10	6/3/26	Final Project Presentations and Final Demos		

Late Policy

Late submissions have 10% off for each day, i.e. grades * 0.9 for one day late **and will be 0 after 3 days late.**

Grading

- This is a **credit/no-credit** course. To receive credit, you will need to:
 - Participate in class discussions.
 - Complete homework assignments
 - Be present and speak during the Mid-quarter and Final Presentations
 - Final Presentation slide deck

Canvas

We will use Canvas (i.e. this site) extensively for course materials and Ed for all communications.

Disability and access accommodations

Your experience in this class is important to me. If you have already established accommodations with Disability Resources for Students (DRS), please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs in this course.

If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact DRS at 206-543-8924 or uwdrs@uw.edu or disability.uw.edu

Religious accommodations

Per Washington state law, students may request accommodations for reasons of faith or conscience. Requests should be submitted within the first two weeks of the course using the University's form.

Safety

Call SafeCampus at 206-685-7233 anytime – no matter where you work or study – to anonymously discuss safety and well-being concerns for yourself or others. SafeCampus's team of caring professionals will provide individualized support, while discussing short- and long-term solutions and connecting you with additional resources when requested.

Academic misconduct

Engineering is a profession demanding a high level of personal honesty, integrity and responsibility. Therefore, it is essential that engineering students, in fulfillment of their academic requirements and in preparation to enter the engineering profession, shall adhere to the University of Washington's [Student Code of Conduct \(Links to an external site.\)](#).

Any student in this course suspected of academic misconduct (e.g., cheating, plagiarism, or falsification) will be reported to the College of Engineering Dean's Office and the University's Office of Community Standards and Student conduct. (See [CoE website \(Links to an external site.\)](#) for more detailed explanation of the academic misconduct adjudication process). Any student found to have committed academic misconduct will receive a 0-grade on impacted academic work (e.g., assignments, project, or exams).

Discuss high-level ideas with classmates, but all submitted work must be your own. Clearly attribute any external resources (including the use of Gen-AI/LLM models); failure to cite may result in the deduction of points, a grade of zero on the submission, and/or reporting to the Academic Misconduct Office. Academic misconduct will be referred to the College of Engineering and the Office of Community Standards.