CS8803: Human-Robot Interaction

course webpage: http://www.cc.gatech.edu/~athomaz/classes/CS8803-HRI/CS-8803.html

CS 8803: Special Topic Course on Human-Robot Interaction

This course will focus on the emerging field of Human-Robot Interaction (HRI). This multidisciplinary research area draws primarily from: robotics, AI, human-computer interaction, and cognitive psychology. The primary goal of HRI is to enable robots to successfully interact with humans. As robots increasingly make their way into functional roles in everyday human environments (like homes, schools, and hospitals), we need them to be able to interact with everyday people. Moreover, a person working with a robot should not be required to learn a new form of interaction. Thus, we need to develop computational models of social intelligence for these robots that will allow them to have interactions that are natural and intuitive for a human partner.

This course will cover a variety of topics related to social intelligence: learning, teamwork, planning, dialog, emotion, embodied intelligence, among others. For each topic, readings and lectures will cover (1) what's known about how this ability arises in human intelligence, and (2) state-of-the-art approaches to building computational systems with this type of social intelligence. Assignments will be a combination of readings, discussions, team problem solving sessions, and a team final project involving the implementation of a Human-Robot Interaction system.

Prerequisites: This is a graduate course meant for students considering the pursuit of research in Human-Robot Interaction. It will be assumed that students have a background in one of the following: AI, robotics, HCI; and an interest in all three.

Instructor

Dr. Andrea L. Thomaz
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Lectures

Students are expected to attend all classes, unexcused absences will effect your final grade. A significant aspect of class will be group discussion and participation. Thus, it is essential that you carefully review the required reading before each class, and be prepared to share your perspective.

Assignments

You will submit a summary and critique of each assigned reading. This is due by noon the day of lecture and should be a maximum of 1 pg (at least 10pt font). In general, your write-up should briefly summarize the reading and contribute some original discussion on the topic, for example a point that you plan to raise in the class discussion.

In addition to the ongoing reading assignments, there will be other small assignments throughout the semester. These will be announced in class and on the course webpage.

Late policy

No late assignments will be accepted. Failing to submit an assignment on time will result in taking a 0 for that assignment. Your 2 lowest assignment grades will be dropped when calculating the assignments portion of your final grade.

Final Projects

A large portion of your grade will come from your final project, which will be done in groups of 2-4 people. The scale of project should reflect the size of the group. Potential class projects will be suggested early in the course, but students are encouraged to come up with their own projects. Deadlines related to the final project will be assigned throughout the semester to create opportunities for you to get feedback from Prof. Thomaz and your classmates. Project proposals will be due at the end of January, and we will have a mid-term project critique before spring break.

Each group will present their project during the scheduled final exam time for this course. You will also create a webpage to document the project. Both your in-class presentation and the online material will be considered when determining your grade for the project.

Grading	40%	Assignments & Critiques
	10%	Participation
	50%	Final Project

Outline of the Course Material

Jan 8	First class, Introduction
week 1&2	Overview of Social Robots, Anthropomorphism, and Design
week 3&4	Intentions, Intentionality, and Perceiving other Minds
week 5&6	Social Learning
week 7&8	Collaboration and Teamwork
week 9&10	Emotion and Empathy
week 11&12	Human-compatible Perception
week 13&14	Measuring HRI
week 15	Presentation skills, and course summary
week 16	Finals week: presentation of final projects