CS798H – Human Computer Interaction

2024-2025 Semester-II

What is the course about?

Daily we come across several computing devices and tools ranging from smartwatch trackers to search engines. Ever wondered what some of them a delight to use, and others frustrate us? Or why learning to use a smartphone or learning to code so easy and natural for some people, and so hard for others? Or whether ChatGPT makes us all smarter or dumber? Questions like these are the concerns of Human-Computer Interaction (HCI) as a field.

This course will cover the basic ground for HCI, specifically focusing on designing computing systems and interfaces that are a delight, and not a frustration to learn and use. Along the way, we'll also learn a bit about humans, about how to understand user needs, and how to evaluate interfaces so they are useful and usable.

In practice, this will involve a bit of learning about computer science, psychology, design and socioloty. That is because HCI is interdisciplinary. So, sharpen your pencils and be prepared to go on the field to interview people, or sketch interfaces.

Hopefully, by the end of the course, you will be able to gain an appreciation for usability and human-centered design and recognize when something is well designed or poorly designed, debug what makes it poor and think of ways to fix and evaluate them.

Who should take it?

If you are looking to get a job as an interaction designer, user researcher, product manager, or any form of design job – this course would be required. These are great fields of work for students in CSE, CGS and Design!

If you are a researcher in CS and are looking to understand how people will use the stuff you build, then you should take this. There is a human aspect to pretty much every subfield of computer science—and a lot of work is publishable in all major CS conferences (Check yours!).

If you intend to start up, this course is a must-have, because design is a key differentiator between competing products.

Anyone else who is curious, wants to better understand the world we cohabit with computers, and exercise their creative brain muscles – this will be a fun course!

More formally, this course is geared towards M.S. / Ph.D. / M. Tech students and interested 3rd and 4th year undergraduate students. It might be of particular interest to students in **CSE, CGS and Design,** but I welcome students from other departments and years as well!

What is the course going to be like?

- Lots of hands-on in class work, project and homeworks.
- Expect 6-8 hours of course load per week.
- There will be quizzes and individual HomeWorks throughout the course.
- There is a mid-sem exam and an end term project report.
- There might be an end-sem exam in addition.

What material will we cover?

Chapter-1: (2 Lectures) **Introduction to HCI.** What is HCI – Interdisciplinary nature of HCI – History of HCI – Importance of design and HCI – The design process – Design thinking and the double diamond of design.

Chapter-2: (5 Lectures) **Elements of good and bad design.** Evaluating and debugging designs - How to fix designs – prototyping – colors, fonts and layouts – basic sketching.

Chapter-3: (3 Lectures) **Basics of Humans.** Basics of human cognition – perception, memory, attention, emotions, model human processor, learning, mental models, creativity.

Chapter-4: (4 Lectures) **Need finding methods.** Data collection (interviews and focus groups, surveys, observational studies in lab and field, contextual inquiry and content analysis). Sampling. Qualitative data analysis (coding, thematic analysis/card sorting, focus group, inter-rater reliability, threads to validity, triangulation). Ethical considerations in human studies.

Chapter -5: (4 Lectures) **Evaluation** (quantitative – controlled experiments, measures, statistical comparisons; qualitative – heuristics, cognitive walkthroughs, desirability and reaction toolkits, hallway usability study).

Chapter-6: (8 Lectures) **Special topics**. Human-information interaction, Human-AI interaction, Creativity and Collaboration, Development and Inclusion.

Grading policy

Tentatively, the grading will include a combination of:

- Exams (35%)
- Assignments and quizzes (30%)
- Project (35%),

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Instructor : Dr. Sruti Srinivasa Ragavan (srutis) Department of Computer Science
When & Where : Tuesdays & Fridays, TuF 15:30-16:45 @ RM101
Office hours : Right after class, or by appointment.

Course policies

1. Dishonesty will be awarded an F, no negotiations.
2. Group projects are grade based on individual contributions and group output.
3. There is no formal attendance, but regular in-class assignments will be graded.
4. Late submissions or absence in exams and project presentations are not entertained by default. For exceptions (medical, bereavement, clashes), please contact the instructor as soon as possible. Post-hoc requests are strictly not entertained!
5. For any special requirements or accommodation (e.g., visible or invisible disabilities, bringing in children) please contact the instructor.