CSCE 572
Human-Computer Interaction

What is it and why is it important?

Dr. Yan Tong

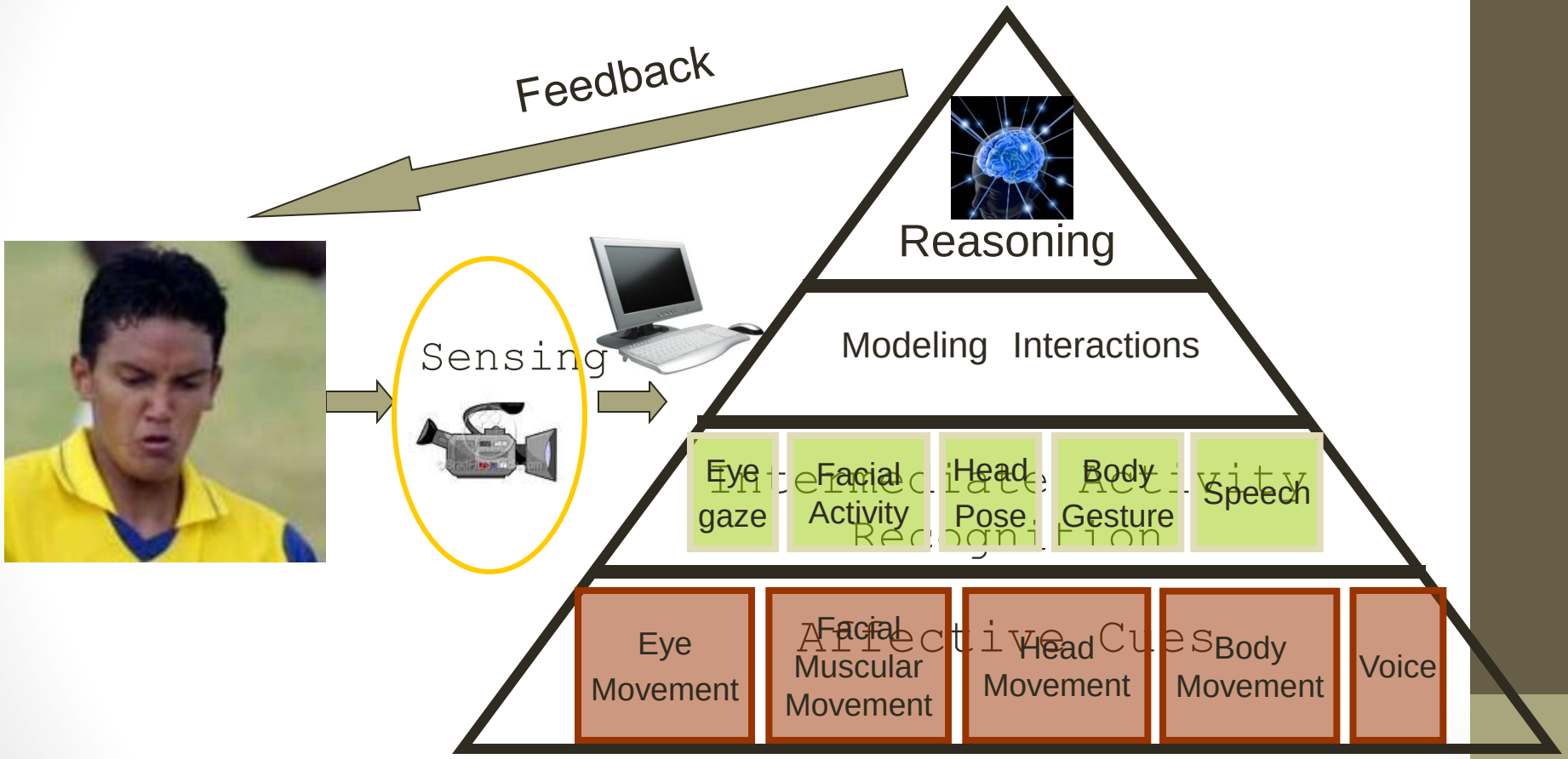
August 20, 2024

Today's Agenda

- Welcome
- Various administrative issues

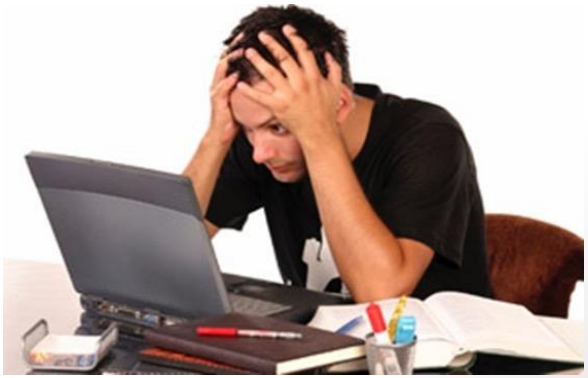
- What is HCI

About Dr. Tong's HCI Related Research: Multimodal Affective Computing



Major Applications

- ✓ Behavior analysis
  - ➢ Medical diagnosis
  - ➢ Psychology
- ✓ Security
  - ➢ Cybersecurity
  - ➢ Video surveillances
  - ➢ Deception detection
- ✓ **Human-centered Human-computer in** Providing feedback
  - ➢ from user to system
    - **User experience study**
  - ➢ **Interactive gaming and commercials**
  - ➢ **Computer-aided online education**



Ongoing Research Project: Reliable Perception for Unmanned Maritime Systems

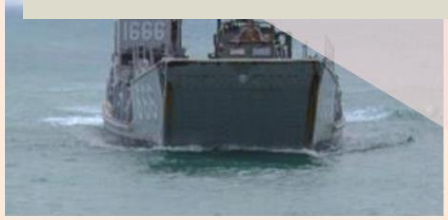
Background:

Self-motivated and passionate students are wanted!

<u>Qualifications:</u>

- US citizens or green card holders
- Hands-on experience with programming in Python, Matlab, and C/C++
- Preferred experience in developing machine learning using PyTorch, TensorFlow, etc.

Contact me if you and/or your friend are interested!



Now, tell me about yourself!

- Name
- Grad or Ugrad?
- Major
- Why do you take HCI?

Class Communication

- **Class homepage**

http://www.cse.sc.edu/~tongy/csce572/csce572.html
Course syllabus

- **Blackboard (**blackboard.sc.edu**)**
  - Course syllabus including a tentative course schedule
  - Lecture notes
  - Discussion board
  - Submit your assignments, quizzes, and exams through Blackboard

Check them regularly for

- Important announcements related to this course
- Some useful links and additional readings

Structure of the Course

- Lectures
- Group work

You need to bring your laptop to class for

- Quizzes
- Exams
- Team work on projects

Grading System

- A (90-100%)
- B+ (86-89%)
- B (80-85%)
- C+ (76-79%)
- C (70-75%)
- D+ (66-69%)
- D (60-65%)
- F (0-59%)

Grading Policy - Undergraduate

Your grade consists of

- Quizzes (5%)
- Two exams (20% each)
- Individual assignments (10%)
- Team project
  - Topic definition and understanding of the problem report (5%),
  - Design alternative presentation (5%),
  - Final project presentation (10%),
  - Final written report (15%), and
  - Participation grade (10%)

Grading Policy - Graduate

Your grade consists of

- Quizzes (5%)
- Two exams (15% each)
- Individual assignments (10%)
- Paper reading and written report (10%)
- Team project
  - Topic definition and understanding of the problem report (5%),
  - Design alternative presentation (5%),
  - Final project presentation (10%),
  - Final written report (15%), and
  - Participation grade (10%)

Additional requirements in the assignments, project, and/or exams to get graduate credits

Attendance Policy

Class attendance is required according to USC policy.

If you have an excused absence with appropriate documentation, you will be permitted to make up coursework or complete an equivalent assignment agreed upon with me.

Late Submission Policy

A due date will accompany each individual/team assignment or each deliverable of the team project.

All course deadlines are listed in **Eastern Time Zone**.

Late submissions are NOT accepted without prior approval from the instructor. Late submission penalty may be applied

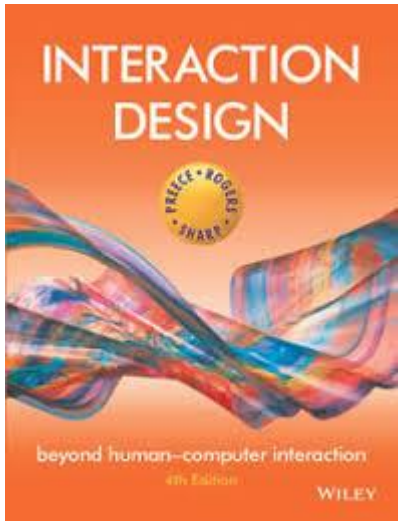
Late Submission Policy

Except group presentations and final written report of the team project, everyone will be granted for a **ONE-TIME** waiver of late submission penalty - you will not be penalized if you submit your assignment in **three days after due date**. For team deliverables, you cannot use the waiver if any member in the team has used the waiver before.

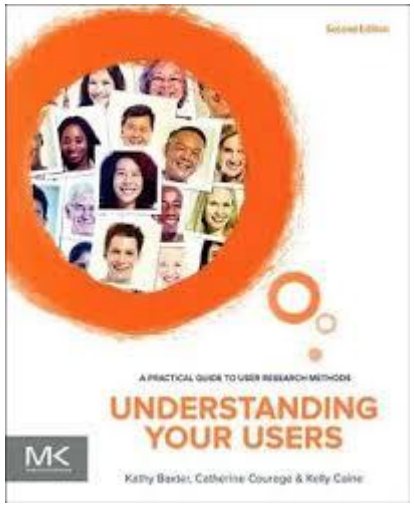
Please notify me in advance, when you use this waiver.

Course Textbooks

- *Interaction Design: Beyond Human-Computer Interaction, (4th Edition)* by Yvonne Rogers, Helen Sharp, and Jennifer Preece



- *Understanding Your Users: A Practical Guide to User Requirements Methods, Tools, and Techniques, by* Catherine Courage, Kathy Baxter, and Kelly Caine



Team Project

Objective: Design an alternative interface for a computer-based application, e.g., an app or a website

Deliverables:

- A written report of topic definition & understanding problem
- Design alternatives presentation
- Interim reports
- System prototype
- Final group presentation scheduled at the final exam time
- Final written report

Examples of Previous Projects

- Improving web design for Blackboard, Yelp, Domino's Pizza, Craglist, …
- Improving a mobile game
- Designing an apps/website for various applications

Team Assignment

5 undergraduate or 2U+2G in one team

Case 1:

- Assigned team members based on background and interests
- Each team may consist of people with different skills

Case 2: self-nominations

- Form your own team
- Send me an email by 11:59pm, Friday, Aug. 30
  - a list of team members
  - copy to all team members
  - Mix-match with other members if you nominate part of the team

First Individual Assignment

Write an essay about yourself (300 - 400 words) and describe

- Your background
- Your major courses taken in CSE if any
- Your hobbies
- Why you want to take HCI and what goal you want to achieve
- Any idea of the project topic if any
- Due in Blackboard: 11:59 pm EST, Friday, Aug. 30

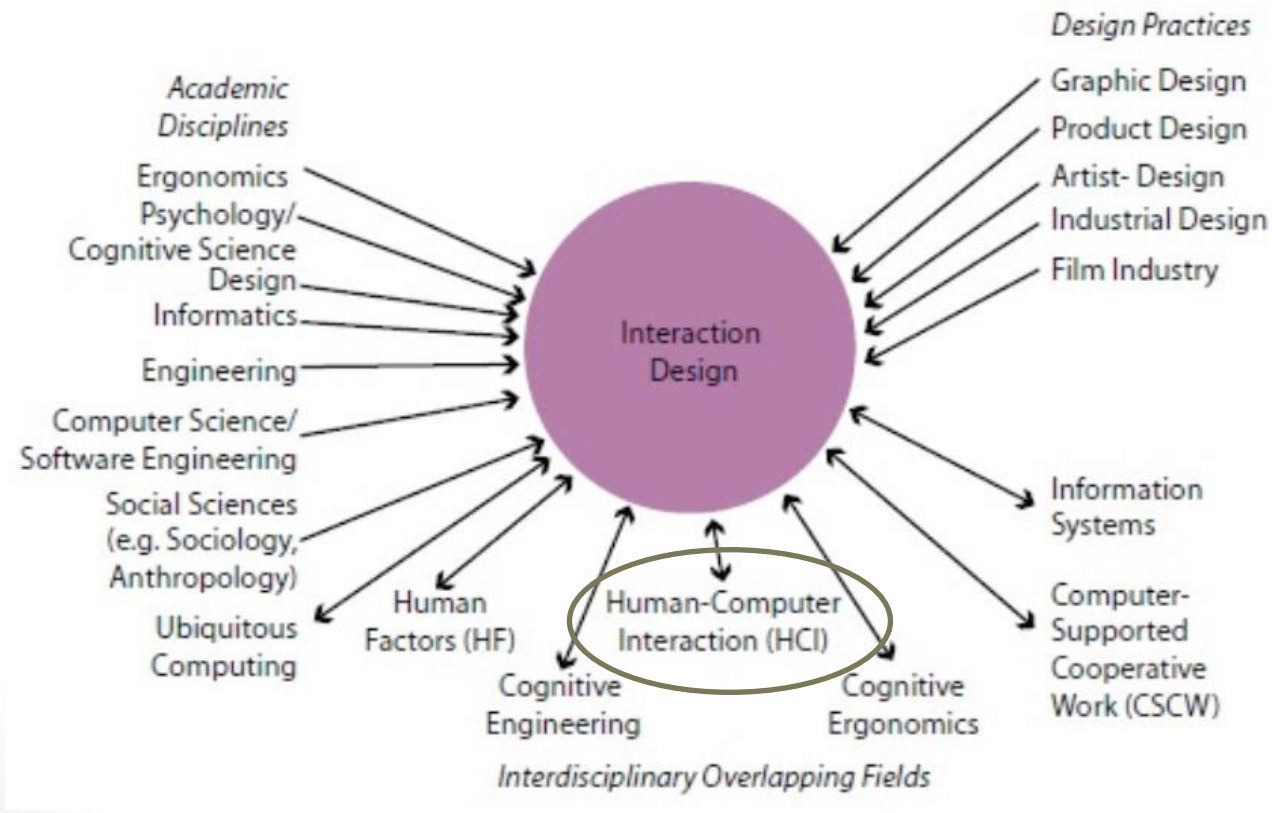
Paper Reading (Graduate Only)

- A literature review on a selected HCI research topic
- A one-page proposal including
  - The topic
  - A brief background introduction
  - A list of papers (tentative) – you can add more papers later
  - Proposal due 11:59 pm EST, Sunday, Sep. 15
- The full written report of literature review due 11:59 pm EST, Sunday, Nov. 17

Now, Let's talk about HCI

What is Interaction Design

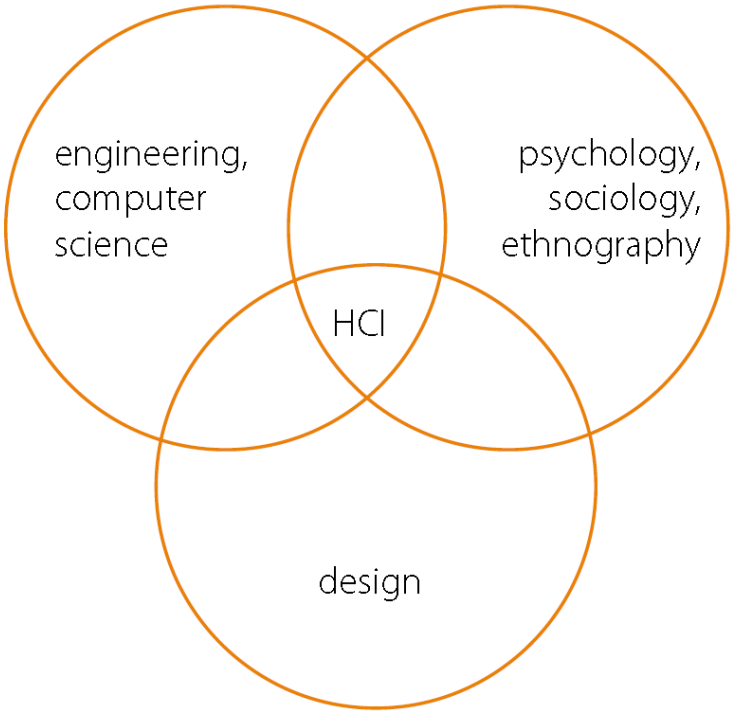
Interaction Design focuses on designing **interactive products** to support the way **people communicate and interact** in their everyday and working lives



Interaction Design: Beyond Human-Computer Interaction, by Rogers, Sharp, and Preece

What is HCI?

HCI "concerned with the design, evaluation, and implementation of **interactive computing systems** for **human use.**" (ACM SIGCHI, 1992, p.6)



The field of HCI: some bits and pieces of its history by Agnieszka Szóstek

Why do You Think HCI Matters?

Examples of HCI

- Vending machines
- Kiosks
- Vehicle panels
- Computer games
- Websites of shopping, banking,
- Smartphones Apps
- And more

Why do You Think HCI Design Matters?

Why do you choose one product versus the other?

Why do You Think HCI Design Matters?

When you buy a new smartphone, what are your desired properties?

- Usability – easy to use
- Functionality – equip some key functions you want, e.g., high quality camera, fingerprint/face ID, large memory, fast processing speed
- Aesthetics – the color, shape, size, etc.

Why do You Think HCI Design Matters?

Why do you choose one streaming service versus the other?

- Usability – easy to search
- Content – more and new TV shows, movies

Why do You Think HCI Design Matters?

Why do you choose one computer game versus the other?

- Sensual appeal – engaged
- Emotional appeal – satisfied, excited

Why do You Think HCI Matters?

Why do you choose one product versus the other?

- Usability
- Functionality
- Aesthetics
- Content
- Sensual appeal
- Emotional appeal
- Etc.

Why do You Think HCI Matters?

- Good designs
  - What do you like
- Bad designs
  - What's wrong with them
  - How can we improve them

Why do You Think HCI Matters?

Common features of good designs

- Easy to learn
- Effective to use
- Enjoyable user experience
  - Reduce negative aspects: frustration, annoyance, boredom
  - Improve positive aspects: enjoyment, engagement, etc.