



Who Am I?

- Ph.D. from Georgia Tech
 Human-Centered Computing
- B.S. from Northeastern – Computer Science
 - Microsoft Research
 - Redmond, WA
 - Cambridge, UK
- Interests
 - How do people engage with technology?Socially, culturally
 - HCI + health
 - Disparities; Nutrition; Maternal Health
 - Mobile Computing; Games; Touchscreen UIs
 - Social Computing; Ethnography; Design



ADMINISTRIVIA

- www.ccs.neu.edu/course/cs5340sp13
- Andrea Parker
 - 460 WVH, a.parker@neu.edu
 - Office Hours
 - Wednesdays 1:30-3:30pm
 - By appointment: send email
- Teaching Assistant
 Serkan Okur (okur.s@husky.neu.edu)
- Class Discussions + Questions + Readings + Announcements
 - Piazza
- Miscellaneous
 - Blackboard

www.ccs.neu.edu/course/cs5340sp13

COURSE OVERVIEW





REQUIREMENTS

- Weekly Requirements
 - Read (and absorb!) 50-150 pages
 - Individual homework assignments
 - Team project assignments
 - Describe and discuss readings + assignments in class
- Periodic Requirements
 - Perform a design/user testing session in class
 - Present a research paper in class

TYPICAL CLASS

- 1. Review assignments; presentation and discussion by randomly selected students
- 2. Pop quiz (drop lowest grade)
- 3. (interactive) Lecture on HCI practice topic
- 4. Discussion of next week's assignments

Break

1. Research paper presentations or design sessions/presentations by students

TECHNOLOGY IN CLASS

- Laptops/Tablets OK
 If being used for class-related purposes
- No cell phones
- If using devices, expect to be called upon
- If seen using devices for unrelated purposes, will be asked not to use them in class



GRADING

- Prior experience suggests that work in this course will generally fall into one of four categories:
 - Good work demonstrating a capacity to use the subject matter, with adequate preparation and clear presentation (B)
 - Work that is adequate but that would benefit from increased effort or preparation (C)
 - Work that needs more effort (D)



- Course participation (10%)
- Research Paper Presentation (10%)
- Individual assignments (30%)
- Team assignments (25%)
 Each contributes equally
- Final interface, report, & presentation (25%)
 - 20% project grade from the instructor +5% peer evaluation

RE-GRADE REQUESTS

- Email a written justification for the request to the instructor
 the aspect of the grade you disagree with,
 - why you believe the grade is incorrect—succinctly and clearly
- Re-grade requests could result in a lower grade being assigned.
- Requests must be made by the end of the class following the date that the instructor returns the graded material, regardless of whether the student is in attendance.
 - If material is returned on Thursday 3/14, then the student has until the end of class Thursday 3/21 to request a re-grade.
- Re-grades will not be discussed in person on the date that they are returned.



COURSE OBJECTIVES

- By the end of term, you should be able to...
 - Design, implement and evaluate effective and usable graphical computer interfaces.
 - Describe and apply core theories, models and methodologies from the field of HCI.
 - Describe and discuss current research in the field of HCI.
 - Implement simple graphical user interfaces in programming language of your choice.
 - Describe special considerations in designing user interfaces for health.



PAPER PRESENTATIONS

READING RESEARCH PAPERS

- Different from reading a textbook?
- <u>http://www.eecs.harvard.edu/~michaelm/</u> postscripts/ReadPaper.pdf
- Read critically
 - Don't assume author is right! Be suspicious
 - Ask questions, challenge rationale, reasoning, conclusions
 - Scientific contribution
- Read creatively
 - Harder
 - What are the good ideas and how could you take them a step further? Build + improve on them?
- Make notes
- Come to class with at least 1 question + insight

PAPER PRESENTATIONS

- Pecha Kucha format (6 min, 40 seconds)
 - Brief description (least important everyone has read it)
 - Your evaluation of the ideas (strengths + weaknesses)
 - How you would extend it (most important part)
 - Template on website ("Research Papers")
- Demo/inspiration
 - 3 minute demo, video, or mock up of something that goes beyond the paper. Show us, or teach us, something new that we would not have learn just from reading the paper.
 - If you need to, you can do this in the middle of Pecha Kucha



- Load on your own laptop, <u>test</u>
- Do <u>not</u>
 - Cut and paste text from paper!
 - Read your slides!
- Practice, practice, practice...
- Grading: See the web page 15% of grade!
- THIS WEEK Sign up: Blackboard
 - Tools \rightarrow Wiki \rightarrow Research Paper Sign Up Wiki \rightarrow Edit
 - Put your name next to the paper you'd like to present



TEAM PROJECT GUIDELINES

- Design & evaluate a UI that...
 - ...solves a real-world health-related problem/ challenge
 - ...is social
 - Used by 2+ people synchronously or asynchronously
 - Or leverages data/info/content from 2+people

TEAM PROJECT GUIDELINES

- Your project MUST
 - Have a substantial UI
 - Be interactive
 - Work robustly
 - Contribute to health or health research
 - Solve a real-world problem
 - Be social

TEAM PROJECT GUIDELINES

- Your project SHOULD
 - Be creative
 - Be original
 - Be non-obvious
 - Have a "wow" factor
- Allow you, at the end of this course, to leapfrog your peers with an amazing demo!

TEAM PROJECT CONSTRAINTS

- Team
 - 3-4 members, ideally multi-disciplinary
- Focus

 Social application that promotes health/wellness
- Context
- Home, on the go, gym, senior center, clinic, etc.
- Users
 - Adults (18+)
- Platform
 - Your choosing
- Input/output/sensing
 - Your choosing



- Do NOT make a system for use by college students
- User group must be different from you in significant ways – do NOT just design a system for yourselves
 - Age (e.g., older adults)
 - Challenges faced (health, family demands, etc.)
 - Occupation (e.g., blue collar)
- Potential categories of systems
 - Ambient display (public, private)
 - "Serious" game (this is non-trivial)
 - Mobile app (if prior experience)
 - App that meets guidelines for a national competition

TEAM PROJECT WHY SOCIAL + HEALTH?

• Technical complexity

- How do you design a system that supports synchronous or asynchronous use by many people (e.g. managing overlapping database updates, dynamically updating UI, server responsiveness)
- Designing visualizations that help people understand not only their own interactions with a system but what others are doing
- Prototyping systems that simulate social interaction for use during user study

TEAM PROJECT WHY SOCIAL + HEALTH? Human-centered complexity Managing privacy (particularly in the context of health) Determining appropriate & desired levels of interaction between system users Many health apps being developed commercially but little is known about their effectiveness Identifying appropriate persuasion mechanisms And... Social media is a pervasive part of our society, a chance to examine the challenges & potential benefits of this platform Health + Technology = an area of much commercial, government, research attention









OBSERVATIONAL STUDIES

- Be prepared to get out into the real world
- Be prepared to use your own ingenuity to seek people out
- Be prepared to spend a significant time observing and testing "in the field"
- Sensitivity is of utmost importance!



- Brainstorming
- Observation
- Iteration
- Be prepared:
 - To get a good idea, have lots of ideas
 - Do not be surprised if I send you back to the drawing board multiple times

INDIVIDUAL HOMEWORK #0

- Due 1/17
- Create a personal course webpage
 - Name & email address at the top
 - post it to a server somewhere
 - Will contain all of your individual homework assignments
 - Make sure the instructor can quickly find each week's work on the page.



- Due 1/17
- Create a personal course webpage
 - Email: your name, email, and the web address to the instructor + TA.
 - See T0 on course website for info on obtaining a CCIS account & server space
- Respond to the email you will receive with questions about your goals for the course.

INDIVIDUAL HOMEWORK #1

- Skim the research papers on health interfaces and CSCW
- Look at the Health UI Bibliography (Resources section in Piazza)

INDIVIDUAL HOMEWORK #1

- Develop 3 project ideas
 - 1 paragraph proposal for each
 - health problems / challenges you are interested in addressing
 - platforms you want to explore (e.g., mobile, web, touchscreen).
 - Any initial ideas for a design concept
 - any programming language preferences

INDIVIDUAL HOMEWORK #1

- By 1/15 @ 6pm
 - Post your 3 proposal ideas in Piazza in the #projectbrainstormingideas folder
 - Monitor the website and see how other students and the instructor respond to your ideas.
 - Comment on ideas from your peers.
- By 1/17 @ 5pm
 - Revise your ideas (or come up with new ones) based on the newsgroup feedback
 - post your 3 best ideas, write-ups & sketches on your web page in order of preference



QUESTIONS, THEN BREAK

HCI OVERVIEW

- What is HCI?
- Motivation for HCI
- Some basic concepts





WHAT IS HCI?

- Interactive computing design & development
 - GUIs & toolkits
 - Mobile computing
 - Speech interfaces
 - Touch interfaces
 - Social interfaces
 - Multimodal interfaces
- Empirical studies of UIs
 - Qualitative, quantitative, mixed, design-based



- Design... but what do we mean?
 - Interaction Design
 - "creating **user experiences** [with and through interactive computing] that enhance and extend the way people work, communicate and interact"
 - What's on the screen, but more...
 - Empirical study + design ideation + UI programming + graphic design

WHAT IS HCI?

- How can we know if a UI is a good one?
- Usability
 - Objective measures
 - Perceived utility, ease of use and efficiency + much more
- and what else?
 - User Experience
 - Users' subjective engagement with technology
 - affect, meaning, values, how a system *feels*
 - Satisfying, enjoyable, motivating, aesthetically pleasing, rewarding, etc.

WHY STUDY HCI?





HCI IS IMPORTANT: SAFETY

- "Users' behavior is directly influenced by operating characteristics of the equipment; user interfaces that are misleading or illogical can induce errors by even the most skilled users"
- Many deaths and injuries attributable to poor human interface (hardware & software) design.



- oxygen flow control knob, smooth rotation but with discrete settings and no flow at intermediates
- FDA Do It By Design An Introduction to Human Factors in Medical Devices

 http://1.usa.gov/a3FtP5

FDA CENTER FOR DEVICES AND RADIOLOGICAL HEALTH REPORT





HCI IS IMPORTANT: SAFETY THERAC-25

- Six accidents involving massive overdoses to patients occurred between 1985 and 1987
- Occasional machine malfunctions with little feedback, resulting in repeated dosages (6 in one case)
- Poor feedback about which mode the machine was in caused treatments with 125x the expected dose
- Machine occasionally underreported dosage











MORE REASONS TO WORK IN HCI?

- Interdisciplinary work
- Interact with people, learn about them and their work
- Help people with software that actually works
- Change our industry
- It's cool...



SOME BASIC ISSUES & CONCEPTS • Building good UIs is hard – Many iterations – Much user interaction

- Many kinds of expertise
- 45-50% of the design + implementation effort in modern software; 48% of code Survey of 74 projects, Myers & Rosson, CHI'92















