How can we design the social systems that we inhabit?
Social computing systems are computational systems that mediate social interactions.

*bitmoji, discord, ebay, email, facebook, github, imdb, instagram, line, lyft, mechanical turk, messenger, pinterest, reddit, slack, snapchat, spotify, skype, stackoverflow, tiktok, tumblr, twitch, twitter, venmo, viber, weibo, whatsapp, wikipedia, youtube*

Sometimes they help us get things done; Sometimes they make our lives more fun; Sometimes they are critical to governance and decision making.
What is social computing design?

Increasingly, we are fashioning social environments online.

Social computing design asks how to fashion those environments in ways that support participants in achieving their goals.

How do we cross the chasm between the social interactions that the group wants to support, and the computer interactions that we have at our disposal or could invent? [Ackerman 2000]
Why is social computing design hard?
Why is social computing design hard?

ghost towns.
Why is social computing design hard?

How do you design a social computing systems that helps promote the behaviors that the group wants to see in the system?

What about a design makes people…

- Feel safe?
- Post funny memes?
- Engage in thoughtful discussion?
Why is social computing design hard?

How do I encourage specific norms on the system?

How do I prototype my idea?

What changes as my social computing system grows?

How do we govern these systems?

How do I manage antisocial behavior, trolls, and ghosting?

How do I get the world to collaborate with me on something?

Do AIs impact social environments?

How do I manage ethical design tradeoffs between groups of people?

Can I design for groups unlike me?

How do I support groups in acting intelligently and not like mobs?
Why is social computing design a serious responsibility?

These systems have the opportunity to help us create a more {thoughtful, deliberative, fun, emotionally connected, empathic, just} society. However, they can also have the opposite effect.

What power do you have as a creator, and what responsibility do you have when creating? Who is, and is not, a part of the conversation?

How do we draw on positive opportunities without unleashing Pandora's Box?
This class will teach...

1. How we design social computing systems
2. The fundamental principles by which these systems operate
3. The challenge and responsibility we have to design these systems effectively and ethically
This class will not teach...

Engineering principles for web applications
  Take CS 142: Web Applications

Algorithms and mathematical models for the social web
  Take CS 224W: Analysis of Networks

The process of human-centered design
  Take CS 147: Introduction to Human-Computer Interaction
Lesson #1: Every Social System Is Designed

How should students interact with each other in this class? How should students interact with me?

If you don’t design, you default. And often the default is far worse.

What happens if you don’t set norms with your project, research, or business partner? With your dormmates?

What kinds of biases and silencing of minority views arises if we don’t critically design the system to prevent them?
Lesson #2: Don’t Kludge

Never just paste social bits into another application. It’s not about whether you have points, or friend/follow models, or real names or pseudonyms. At least not directly.

Books will tell you to do this: “To have a successful social app, make sure every piece of content that can be shared has a URL!”

This is true. But it’s like saying your bridge will work if you have strong ropes. The local materials matter, but if the global design stinks, even the best materials won’t save you.
A Class in Two Acts

Act I: We Got This!
Creating bustling spaces rather than ghost towns
Designing norms and culture
Bootstrapping and prototyping
Growth and breadth
Designing for strong and weak ties
Group collaboration
Wisdom of the crowd
Crowdsourcing and peer production

Act II: We Don’t Got This.
Antisocial computing: mobs and trolls
Unintended consequences
Collective governance
Free speech, ethics, and content moderation
AIs in social environments
Future of work
Class structure

Mondays+Wednesdays: Lecture
Three units
Three assignments
Midterm in Week 6
Final group project
Prerequisites

This is not like other Computer Science classes. So, the prerequisites are different as well.

I expect at least basic programming familiarity (CS 106A) as it informs an understanding of what these systems can and cannot do.

Expected background for the final project may differ based on the kind of project that you seek to do.
Grading

Assignment 1: 10%
Assignment 2: 10%
Assignment 3: 10%
Midterm: 30%
Final project: 40%
Final project

Groups of three

Design, launch, and manage a social computing system

Different routes to success depending on your team’s interests and strengths

Due at the end of finals

Socially interesting
novel design; recombined software;
substantial behavior and dynamics

Technically interesting
novel design; novel software;
some behavior and dynamics
This class is being offered for the first time in 2019.
It will not be a standard genre class for Stanford or Computer Science.
I appreciate your enthusiasm for trying new things, your patience for bearing with things that don’t quite work, and your sharing with me your opinions on what we should keep and change.
Questions so far?
starting with the class in microcosm:

Going Viral
Viral content

What is it? Why does it happen online? Discuss [3min]

Stanford Marriage Pact announces second year of experiment

Meet the Man Who Popularized the Viral #Trashtag Challenge Getting People Around the World Cleaning Up
Surface features of a meme

Sharable URL
Simple message
Low friction to share
#catchyhashtag

…but these characteristics are themselves insufficient, and relying on them means you’re not really trying.

[30 Rock]
Backing up: where does cultural innovation come from?

Often, we discuss cultural innovation from the perspective of the structure of the communities that produce it, referred to as core and periphery [Bynum et al. 1999]

- Core: mainstream
- Periphery: marginal communities

Cultural innovation is often greatest amongst those occupying an intermediate, bridging position between core and periphery [Cattani and Ferriani 2008; Dahlander and Frederiksen 2012].
Backing up: where does cultural innovation come from?

Why would intermediate positions in the network be the sources of cultural innovation?

And what does this mean about how you go about designing social systems that spread?

Discuss [2min]

What peripheral communities are you a bridge into? How might they bring new perspectives?
Probability of doubling in size

- Friends weren’t interested
- Broad appeal
- Only your friends were interested

Initial structure

[Cheng et al. 2014]
So it’s deterministic?

[Salganik, Dodds, and Watts 2006]

Experiment: gather 48 songs of unknown songs from indie bands. Create a Spotify clone for online music listening. 🎵

Recruit ~14,000 participants from an online teen forum

Randomize participants into an independent condition or a social influence condition.

Social influence: can see the number of previous downloads for the song

Independent: no information about the number of previous downloads
So it’s deterministic? [Salganik, Dodds, and Watts 2006]

Further randomize each participant into one of eight possible parallel “worlds” where the download counts all start at 0.
So it’s deterministic?

[Salganik, Dodds, and Watts 2006]

Result One: social influence increased both inequality and unpredictability of success.

Result Two: The best songs rarely did poorly, and the worst rarely did well, but any other result was possible.

Further evidence from a social content aggregator: randomly bumping up initial scores inflated final scores; randomly penalizing initial scores had few long-term effects [Muchnik, Aral, and Taylor 2013]
Why? Social proof.

[Cialdini 1984]

Social proof: when people copy each others’ behavior

In social situations when people are unable to determine the appropriate behavior, they look to what others are doing.

The assumption is that others know what they are doing, so their behavior becomes a kind of proof.
Why? Social proof.

[Cialdini 1984]

Social proof: when people copy each others’ behavior

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Looking up at a building

[Milgram, Bickman, and Berkowitz 1968]
Viral truth

Discuss: How would you make a correction, truth, or debate go viral? [3min]

See also: Reddit and the Boston Bomber incident
Investigation of rumors spread on Twitter over eleven years...

The top 1% of false news cascades diffused to between 1000 and 100,000 people, whereas the truth rarely diffused to more than 1000 people.

Falsehood diffused faster than the truth.
Viral truth: LOL IT’S HARD

[Vosoughi, Roy, and Aral 2018]

False news was more novel: maybe people spread it because it’s novel?

Bots accelerated true and false news at the same rate, so false news is spreading more virally than truth because humans, not bots, are spreading it.
So now what? What makes a meme?

Michael’s synthesis:

1) Capture an unspoken, unacknowledged, or unarticulated zeitgeist.
2) Focus on one simple message, conveyed in a creative way.
3) Know that you may need to take multiple cuts at it before the randomness falls in your favor.
4) Acknowledge that false, negative and aggressive content spreads faster, but don’t give in. Focus on doing good in the world.
Assignment 1: Go Viral

Recognize how hard it is to do this well, and build intuitions for the challenges and opportunities in social computing design.

Goal: create a piece of content that goes viral.

You must create it. You may remix others’ content. You may try multiple things. No negativity; create joy, not pain.

Due April 9 (next Tuesday) at 11:59pm.

Class crowdsourced grading to come.

Details at hci.st/cs278.
Social Computing
CS 278 | Stanford University | Michael Bernstein

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