Social Computing

CS 278 | Stanford University | Michael Bernstein

Kickoff question, reply in Zoom chat:

What’s your favorite recent meme?
How can we design the social systems that we inhabit?
What is social computing?

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, zoom*

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 to support the 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]
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 or silencing of minority views arises if we don’t critically design the system to prevent them?
Why is social computing design hard?
Why is social computing design hard?
Why is social computing design hard? ghost towns.
Why is social computing design hard?

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.

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.
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? 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 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
Zoom etiquette

Write questions into Zoom chat

Feel free to reply to each other — TAs will also reply

I will stop occasionally for Q&A

TAs will re-share some of the questions with me

Feel free to use the “Raise Hand” reaction during Q&A to put yourself in the queue to ask an additional question (and don't forget to unmute)
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.
A Class in Two Acts

Act I: We got this!
- Bustling spaces and ghost towns
- Designing norms and culture
- Growing pains
- Designing for strong and weak ties
- Group collaboration
- Wisdom of the crowd
- Crowdsourcing and peer production

Act II: Not so much.
- Antisocial computing: mobs and trolls
- Moderation
- Decision-making and governance
- AIs in social environments
- Future of work
- Unintended consequences
Class structure

Mondays+Wednesdays: Lecture on Zoom
Discussion on Zoom
Three units
Four assignments
Midterm in Week 7
Final group project (scaled to be COVID-friendlier)
Grading

Assignments: 30%
  Assignment 1: 6%
  Assignment 2: 8%
  Assignment 3: 8%
  Assignment 4: 8%

Midterm: 30%

Project: 30%
  Proposal: 5%
  Milestone: 5%
  Final paper: 20%

Discussion section participation: 10%
Final project

Groups of three: we will help facilitate group formation using Piazza

Your goal: design, launch, and manage a social computing system

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

Scaled back due to COVID-19

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

Technically challenging
novel design; novel software;
some behavior and dynamics
This class is being offered for the second time in 2020. 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.
This class will not be offered next year.

(Michael will be on sabbatical.)
http://cs278.stanford.edu
Questions so far?
Going Viral

Starting the class in microcosm
Breakout room etiquette

Introduce yourself, video on if feasible

Green text at the top will remind the topic

No video is recorded during breakouts

Return to the main room afterwards and share out insights into Zoom chat
Viral content

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

NEWS
Stanford Marriage Pact releases second annual Campus Report

LITERALLY ANY MASK
EVERYONE
HAND WASHING, DISINFECTION, CONTACT AVOIDANCE

PRESENTED WITH DVS
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

Initial structure

Broad appeal

Only your friends were interested

[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.

```python
random.randint(["influence","independent"])
random.randint(1,8)
random.randint(1,8)
```
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.

Looking up at a building [Milgram, Bickman, and Berkowitz 1968]

42% looked

~60%

~80%

86%
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.

Looking up at a building [Milgram, Bickman, and Berkowitz 1968]

4%

~10%

~15%

40%
Discuss: How would you make a correction, truth, or debate go viral? [3min]

See also: Reddit and the Boston Bomber incident
Viral truth: LOL IT’S HARD

[Vosoughi, Roy, and Aral 2018]

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: Going 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. Make multiple attempts and iterate! No negativity; create joy, not pain.

Due next Wednesday at 11:59pm: submit meme to our class server, and submit reflections to Canvas.

Class crowdsourced voting to come.

Details at cs278.stanford.edu
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