Social Computing

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CS 376
Announcements

- Project abstract draft due Friday
Recall…

Sociotechnical system

Emergent behaviors result from interactions between social relationships and technological interventions.
Social computing

- Aims to understand how technology impacts human social behavior, and design those mediating systems more effectively

- Today we will cover:
  - Operationalizing theory: drawing on the social sciences
  - Designing online communities: what makes communities thrive?
  - Social influence: how do people impact each other?
  - Knowledge sharing: groups that share and gather information
  - Leadership and collective action: what role do these play online?
Operationalizing theory
Recall...

- Facebook usage increases all types of social capital, especially bridging social capital

[Ellison, Steinfeld and Lampe, JCMC '07]
Recall...

- Can we observationally model tie strength? [Granovetter '73]

- Most predictive:
  - Days since last communication
  - Days since first communication
  - Wall words exchanged
  - Mean strength of mutual friends
Does SNS use impact tie strength? [Burke and Kraut 2014]

• “The Internet Paradox” [Kraut 1998]: people are more lonely the more they use the internet. Does Facebook use really displace other forms of social interaction?

• Method: longitudinal time-series analysis of self-reported tie strength, compared to Facebook activity logs

• Result: composed pieces (comments, posts, messages) increase it substantially, but one-click pieces (likes) only by a bit
How does SNS impact ____?

• Well-being?
  • “Receiving targeted, composed communication from strong ties was associated with improvements in well-being while viewing friends' wide-audience broadcasts and receiving one-click feedback were not.” [Burke and Kraut 2016]

• Job hunting?
  • “Most people are helped through one of their numerous weak ties but a single stronger tie is significantly more valuable at the margin” [Gee, Jones and Burke 2017]
Presentation of Self in Everyday Life

[Goffman 1959]

- Established face-to-face interaction between people as an object of study
- Metaphor: life as performance
  - People work to guide the impression that people develop of them
- On-stage: public life
- Off-stage: private life
The Many Faces of Facebook
[Zhao et al., CHI ’13]

- Facebook appears monolithic, but there are three functional regions
- Semistructured interviews
- Performance region (for now)
- Exhibition region (for later)
- Personal region (for reflection)

Michael Bernstein
February 24
CS 376 is the best and I am studying hard right now!

Michael Bernstein
February 24
I got into Stanford! English major, here I come!

Michael Bernstein
February 24
After a lot of soul-searching, English isn’t for me…
Estimating audience size
[Bernstein et al., CHI 2013]

How might our activities be impacted if we are incorrectly estimating our audience size?

Method: compare survey results ("How many people do you think saw your most recent update?") to log results

Facebook users underestimate audience size by 4x
Median reach is 35% per post and 61% per month
Many want larger audiences but already have them
Reasoning about FB’s algorithms

[Eslami et al., CHI 2015]

- What are peoples’ mental models of social news feed algorithms?
- Result: over half of Facebook users are unaware of the existence of the news feed algorithm
  - “Initial reactions for these previously unaware participants were surprise and anger.”
  - “Participants were most upset when close friends and family were not shown in their feeds.”
Online communities
Motivation: why participate?

- Intrinsic motivators: drawn from my own desires to complete a goal or task
  - Examples: pleasure, hobby, developing a skill, demonstrating a skill
- Extrinsic motivators: do not derive from my relationship with the goal or task
  - Examples: money, graduation, points, badges
- Motivation Crowding Theory
  - Applying external motivators to an intrinsically motivated task reduces participation
Contributions via uniqueness
[Beenen et al., CSCW ’04]

- Social loafing: why should I contribute if many others could as well?
- Hypothesis: calling out the uniqueness of contributions will increase participation
- Method: rating campaign on MovieLens
  - “As someone with fairly unusual tastes, you have been an especially valuable user of MovieLens [...] You have rated movies that few others have rated: [...]”
- Result: participants in the uniqueness condition rated 18% more movies
Anyone can become a troll
[Cheng et al., CSCW 2017]

- Popular press: trolling is confined to an antisocial minority
- This paper: a substantial amount of online trolling is due to normal people on a bad day

- Experiment: put people in a good or bad mood, show them positive or negative initial posts in a thread
  - Measure resulting trolling behavior
Positive Mood | Negative mood
---|---
Positive context | 35% trolling | 49% trolling
Negative context | 47% trolling | 68% trolling

- Replicating on a large dataset of comments on CNN.com, trolling behavior tracks known regular human mood patterns:

![Graphs](a) Time of Day (EDT) (b) Day of Week
How do we manage trolls?

[Chandrasekharan et al., CSCW 2017–2018]

- Question: does banning bad behavior help, or just relocate the behavior?

- Dataset: Reddit banned /r/CoonTown and /r/FatPeopleHate as violating its hate speech policy

- Result: many accounts left; those that stayed, did not introduce hate speech into other subreddits they migrated into
Combating censorship
[Hiruncharoenvate, Lin and Gilbert, ICWSM ’15]

- The Chinese government censors sensitive topics on social media
- However, homophones can be difficult for censors to distinguish from intended use
  - 和谐 (slang ‘censorship’) vs. 河蟹 (river crab)

- This work introduces an algorithm that decomposes words and nondeterministically creates homophones that are likely to create confusion for censors
Discussion

[Viégas and Donath, CHI '99]

- Chat circles: “narrowcasting” via physical proximity
Social influences on the wisdom of crowds
Unpredictability in an artificial cultural market

[Salganik, Dodds, and Watts, Science '06]

- Puzzle: it is extremely difficult for experts to predict which songs, movies and books will be hits
- Method: 14,000 participants download free music from an online site
  - Random assignment: no download info, or one of eight worlds that all start with zero downloads
- Result: huge variance in download counts
  - Best songs rarely did poorly, worst songs rarely did well; any other outcome was possible
Reputation systems

- Reputation is a core signal in social systems
- Study of eBay feedback
  - Despite incentives to free ride, over half of eBay transactions leave feedback
  - Feedback is almost always positive
  - High reputations didn’t lead to higher seller prices
  - Evidence of reciprocation and retaliation
Knowledge sharing
Answer Garden

[Ackerman and Malone, OIS '90]

- An “organizational memory” system: knowing what the company knows
- Main idea: members leave traces for others to solve their questions
- The original Yahoo! Answers, Quora, Aardvark
Expertise recommendation

[McDonald and Ackerman, CSCW ’00]

- Recommend people, not documents
- Goal: help organizations know who can tackle each problem
Aardvark: social search engine
[Horowitz and Kamvar, WWW ’10]

- Technical challenge: question routing over IM
  - Use a joint model over topical relevance and social distance
- Interesting equilibrium: people were more willing to answer questions than ask them!
Leadership and collective action
Recall: conflict and coordination

- What happens to collaboration costs as Wikipedia grows? [Kittur, Suh, Pendleton, and Chi, CHI '07]

Amount of direct work on articles goes down, and activity on coordination pages goes up
What makes a leader?

• Reader-to-leader framework
  [Preece and Shneiderman, AIS Trans. HCI ’09]
  • Readers > Contributors > Collaborators > Leaders
  • Goal: guide users into each new stage
  • See also: Legitimate peripheral participation
    [Lave and Wenger ’91]
• Leaders are born, not made
  [Panciera, Halfaker, Terveen, GROUP ’09]
  • Power editors on Wikipedia do more work than others, even from their first day on Wikipedia
One-sided gatekeeping
[Keegan and Gergle, CSCW ’10]

• How powerful are leaders in open communities like Wikipedia?
• Method
  • Data mine nominations for breaking news articles on the Wikipedia homepage
  • Stories were nominated and voted on by elite, middle-class, and newbie editors
• Result: “one-sided gatekeeping”
  • Elite editors could block nominations, but had no ability to get their nominations approved
No place to participate
[Suh et al., WikiSym ’09]

• Can fit Wikipedia’s curve to a ecological population model with a fixed resource limitation
More decline

[Halfaker et al., American Behavioral Scientist ’13] and [Wikimedia]
Skills for social computing research

- Skills for understanding and designing social computing systems are complementary
- Understanding: computational social science methods and theory
  - Social psychology, sociology, data mining
- Designing: core challenge is designing for emergent behavior