Social Computing

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CS 376
abstract grading
Recall…

Sociotechnical system

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

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

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

- The Strength of Weak Ties
  [Granovetter ‘73]
Recall...

- Systems and applications research
  FeedMe
  ReMail
  Chat Circles
  Link Different
Recall…

- Can we observationally model tie strength?
- Most predictive:
  - Days since last communication
  - Days since first communication
  - Wall words exchanged
  - Mean strength of mutual friends
Operationalizing theory
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)
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
Motivating participation
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
Contributions via goal-setting
[Beenen et al., CSCW ’04]

- Specific, high-challenge goals are known to increase performance on tasks
- Hypotheses
  - H1: specific numeric goals will produce more participation than “do your best” goals
  - H2: individual goals will produce more participation than group goals
- Method: rating campaigns on the MovieLens web site
- Results
  - H1 confirmed (3 extra ratings)
  - H2 disconfirmed (group goals produced more)
Experts and questions
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
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
Continued decline
[Halfaker et al., American Behavioral Scientist ‘13]
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

nfekt (69 ⭐)
100% Positive feedback
Exploration and visualization
Exploring social data

- Social media data can help us understand the world around us
- For example: dips in tweet volume show when people are attending to Obama in his SOTU address
  [Shamma et al., CSCW Horizons ’10]
Social data exploration

[Heer, Viégas and Wattenberg, CHI '07]
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
## Discussion rooms

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