Social Computing

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Human-computer interaction







Ubiquitous computing







Social computing



Social computing goals

- Design new forms of large-scale human interaction
- Take advantage of the technology-mediated nature of the medium to understand human relationships
- Guide large groups of people to achieve complex, large-scale goals



The intellectual challenge of social computing design

User-centered design perspective:

support socially and what we can support technically." [Ackerman 2000]

Invention and design thinking perspective:

[Shirky 2008]

• "The social-technical gap is the divide between what we know we must

• By lowering the transaction costs to connect with others, what kinds of unstated needs and new behaviors might the internet empower?



The intellectual challenge of social computing science

- How has technology-mediated interaction changed our relationship with each other and with the world?
- By manipulating the technology platform, can we learn how people interact with each other?

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Sociotechnical system

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



Terminology

Social computing vs. Crowdsourcing?



Terminology

 Social computing People seek out each other

 Crowdsourcing The system seeks out people

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Design

Directed communication

 Feedback and social signaling [Bernstein et al., CHI 2010]



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Broadcast communication

• Who has seen this before? [Gilbert, CHI '12]



• Narrowcasting to a selective audience [Viégas and Donath, CHI '997

Managing information overload Learning from one user's behavior to predict another user's

- behavior
 - GroupLens, aimed at personalizing and filtering usenet [Resnick et al., CSCW '94]
- Sorting, filtering, exploring social streams

google

patelpatel 1 week, 3 days ago Using the XMPP service - Google App Engine. http://bit.ly/jUi5M 1 week, 3 days ago namevoyager New milestone in online journalism: Google News just put an Onion article on its front page. trebaknow 1 week, 4 days ago email, it consumes my life. i have gmail on intravenous now, so i actually almost died during tuesday's outage.



[Bernstein et al., UIST '10]

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Understanding

Social capital

- Bridging
- Bonding

BOWLING ALONE

THE COLLAPSE AND REVIVAL OF A MERICAN C D M M U N I T Y

Robert D. Putnam



Social capital in social network sites (SNSes) Scaled Bet Intercept 3.8

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

[Ellison, Steinfeld and Lampe, JCMC '07]

Regression predicting bridging capital scale

	Scaled Beta
Intercept	3.80
Gender: male	-0.02
Gender: female	0.02
Ethnicity: white	0.08
Ethnicity: nonwhite	-0.08
Income	0.04
Year in school	0.00
State residence: in-state	-0.05
State residence: out-of-state	0.05
Local residence: on campus	-0.04
Local residence: off campus	0.04
Fraternity/sorority member	-0.01
Not member of fraternity/sorority	0.01
Hours of Internet use per day	-0.03
Self-esteem	0.20
Satisfaction with life at MSU	0.66
Facebook (FB) intensity	0.34



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

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Conflict and coordination

- As more editors join, which kinds of coordination techniques succeed? [Kittur and Kraut, CSCW '08]
 - Explicit: participation in talk pages
 - Implicit: set direction by making edits

More editors only improves article quality only with implicit coordination — a few take on a disproportionate amount of work.

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Predicting Tie Strength • The Strength of Weak Ties [Granovetter, Am. Jour. of Soc. '73]

- Cited by 23692
 - Strong ties: a small number of people you know very well
 - Weak ties: your large number of acquaintances
 - Theory: your weak ties are bridges to other parts of the network; they can help you find jobs and information
- How well can you predict tie strength observationally using social media?
- Coming up: What happens to tie strength when you communicate using social media?





Crowdsourcing

Participation toward a goal

- science experiments [Ipeirotis 2010, Heer et al. 2010, Kittur et al. 2008]
- Games with a purpose [von Ahn and Dabbish 2004, Cooper et al. 2011]
- Collective action [Wikipedia, Polymath Project, Search for Jim Gray]

• Data collection, machine learning training, user studies, social



Games with a Purpose Label every image on the internet using a game

[von Ahn and Dabbish, CHI '06]







Scientific Collaboration

- FoldIt: protein-folding game
 - Amateur scientists have found scientists for years



Amateur scientists have found protein configurations that eluded

Rank: 17 48: Pro Peptide Group Competition	Score:	909	92
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Player Competition			
16 psen 17 kathleen 18 versat82 19 darktorres 20 ccarrico 21 mbjorkegren 22 sslickerson	9(9(092	9098 9092 9091 9081 9066 9048 9038
► Chat			



Paid Crowdsourcing

- Pay small amounts of money for short tasks
- at I-5¢ each [lpeirotis 2010]

Label an image

Reward: \$0.02

Transcribe audio clip

Reward: \$0.05

- Population: 40% U.S., 40% India, 20% elsewhere
- distributions [Ross 2010]

Amazon Mechanical Turk: Roughly five million tasks completed per year

Gender, education and income are close mirrors of overall population



Paid Crowdsourcing: Goals • Design and create crowd-powered systems

- Design and create crowd-pov (e.g., Soylent)
- Design algorithms and design patterns for complex tasks
- Understand worker motivation
- Quality control
- Coming up in a future class...

patterns for complex tasks on

