Social Computing Systems

Harmanpreet Kaur

EECS 498/598, Winter 2018
(http://tiny.cc/socsClass)
Today

- Workplace tools for communication / collaboration
- Collaboration in traditional and new organizational structures
- Collaborative filtering
Workplace Communication Tools
Email

Gmail

Outlook.com

WEBMAIL
Slack (and IRC)
MUDs (e.g., Second Life)
Second Life and the Walk-In Internet

http://oljic.blogspot.com
Computer Supported Cooperative Work
CSCW: Definition

“CSCW should be conceived of as an endeavor to understand the nature and requirements of cooperative work with the objective of designing computer-based technologies for cooperative work arrangements.”

- Kjeld Schmidt and Liam Bannon (1992)
CSCW: Definition

“CSCW should be conceived of as an endeavor to understand the nature and requirements of cooperative work with the objective of designing computer-based technologies for cooperative work arrangements.”

- Kjeld Schmidt and Liam Bannon (1992)

“CSCW addresses how collaborative activities and their coordination can be supported by means of computer systems.”

- Peter H. Carstensen and Kjeld Schmidt (1999)
CSCW: Four Concepts

- Common Ground
- Coupling of Work
- Collaboration Readiness
- Technology Readiness

Gary M. Olson, and Judith S. Olson. "Distance matters." Journal of Human-computer interaction (2000)
Common Ground

Common ground refers to that knowledge that the participants have in common, and they are aware that they have it in common.
Common Ground

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- **Copresence:** same physical environment
- **Visibility:** visible to each other
- **Audibility:** speech
- **Contemporality:** message received immediately
- **Simultaneity:** both speakers can send and receive at the same time
- **Sequentiality:** turns cannot get out of sequence
- **Reviewability:** able to review other’s messages
- **Revisability:** can revise messages before they are sent
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Coupling of Work

The extent and kind of communication required by the work

- Tightly coupled: interdependent, nonroutine, ambiguous
- Loosely coupled: fewer dependencies
Collaboration Readiness

Consulting firm

1991

4 roles: staff consultant, senior consultant, manager, and principal

Management introduced Lotus Notes collaboration tool

Wanda J. Orlikowski "Learning from notes: Organizational issues in groupware implementation." In Proceedings of CSCW 1992
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Technology Readiness

- Skype
- #irc chat
- Gmail by Google
- Slack
- Google Hangouts
Future Tools
Telepresence
Telepresence Research

“Room2Room”
by Microsoft Research
Telepresence Robots

(Beam Pro)
Same Features, New Orgs
Peer Production

“Collaboration among large groups of individuals, sometimes in the order of tens or even hundreds of thousands, who cooperate effectively to provide information, knowledge or cultural goods without relying on either market pricing or managerial hierarchies to coordinate their common enterprise”

- Yochai Benkler and Helen Nissenbaum (2006)

Peer Production
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Coupling of Work

- Tightly coupled?
- Loosely Coupled?
- Both?

https://en.wikipedia.org/wiki/The_Beatles
Collaboration Readiness
Technology Readiness
Technology Readiness

SuggestBot predicts that you will enjoy editing some of these articles. Have fun!

<table>
<thead>
<tr>
<th>Stubs</th>
<th>Cleanup</th>
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<tbody>
<tr>
<td>Jamie Waylett</td>
<td>Devon Murray</td>
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<tr>
<td>Phineas Nigellus</td>
<td>David Heyman</td>
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<td>Christian Coulson</td>
<td>Chris Rankin</td>
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<td>Molly Parker</td>
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<td>Alfred Enoch</td>
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<td>Hogwarts Head</td>
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<td>Harry Potter and the Half-Blood Prince (film)</td>
<td>Minor Dark wizards in Harry Potter</td>
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<td>Erskine William Gladstone</td>
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<td>Dartmoor Preservation Association</td>
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<td>Unauthorized Chinese Harry Potter books</td>
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<td>Hogwarts headache</td>
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<td>Major powers - France</td>
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<td>Biblical judges</td>
<td>Tom Felton</td>
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<tr>
<td>Manitoba Lotteries Corp.</td>
<td>Filius Flitwick</td>
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<td>Madam Hooch</td>
<td>Ralph Fiennes</td>
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<td>Adrian Rawlins</td>
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<td>Geraldine Somerville</td>
<td>Derren Litten</td>
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<td>Ottery St. Catchpole</td>
<td>Shambuka</td>
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<td>Marvolo Gaunt</td>
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<th>Wikify</th>
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<td></td>
<td>Froogle</td>
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SuggestBot picks articles in a number of ways, from comparing articles that need work to other articles you've edited, to choosing articles randomly (ensuring that all articles with cleanup tags get a chance to be cleaned up). It tries to recommend only articles that other Wikipedians have marked as needing work. Your contributions make Wikipedia better -- thanks for helping.

Personalization
Collaborative Filtering
Collaborative Filtering

Spotify

Netflix

Amazon

Goodreads

The New York Times

eBay

YouTube

IMDb

Pandora

Gmail
Collaborative Filtering

<table>
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## Collaborative Filtering

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<td>![Math Image]</td>
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<td><img src="image" alt="MATH" /></td>
<td>Better for new users; Better prediction performance; Expensive model-building</td>
</tr>
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Memory-based Collaborative Filtering

User-User

- Recommend things based on similar user profiles

Item-Item

- Recommend things based on similarity between items (calculated based on people’s ratings)
## Movie Recommendation Challenge

People’s ratings of movies provided below (ratings are out of 5; ? = unwatched):

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<tbody>
<tr>
<td>Sai</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>3</td>
</tr>
<tr>
<td>Stephanie</td>
<td>2</td>
<td>1</td>
<td>?</td>
<td>?</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Alan</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Lucy</td>
<td>?</td>
<td>4</td>
<td>?</td>
<td>1</td>
<td>2</td>
<td>?</td>
<td>4</td>
</tr>
<tr>
<td>Jean</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>?</td>
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Questions

1. Who has the most similar taste to Alan based on movie ratings?

2. Recommend an unseen movie that Sai should watch next. Explain why.

3. Which movie is most similar to Moana? Explain why.
Recap

Workplace tools for communication

CSCW: definition & important considerations for thinking about collaboration tools

Collaborative filtering
  - User-user vs. item-item memory-based algorithms

Due to the CONFIDENTIALITY of my job,
I don’t know what I’m doing.
Readings

Extra-credit reading for 498 students

- Distance Matters by Olson and Olson

Required reading for 598 students [Response paper due by next Tuesday]

- Distance Matters by Olson and Olson
- Power of the few vs. wisdom of the crowd: Wikipedia and the rise of the bourgeoisie by Kittur et al
- [optional] A survey of collaborative filtering techniques by Su and Khoshgoftaar

Paper should include:

- a paragraph about each of the readings that explains the problem space and the argument presented in the paper
- one page synthesis of all the readings that connects them in a coherent way (there’s no right answer here -- you can tell *your* story!)