The Other Kind of Networking: Social Networks on the Web

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Web-Based Social Networks (WBSNs)

• Social Networking on the Web
• Websites that allow users to maintain profiles, lists of friends

What is a Social Network

• People and their connections to other people

Criteria

1. It is accessible over the web with a web browser.
2. Users must explicitly state their relationship with other people qua stating a relationship.
3. Relationships must be visible and browsable by other users in the system.
4. The website or other web-based framework must have explicit built-in support for users making these connections to other people.
Numbers

- 141 Social Networks
- >200,000,000 user accounts
- Top Five
  1. My Space  56,000,000
  2. Adult Friend Finder  21,000,000
  3. Friendster  21,000,000
  4. Tickle  20,000,000
  5. Black Planet  17,000,000

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Types / Categories

- Blogging
- Business
- Dating
- Pets
- Photos
- Religious
- Social/Entertainment

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Relationships in WBSNs

- Users can say things about the types of relationships they have
- 60 networks provide some relationship annotation feature
- Free-text (e.g. testimonials)
- Fixed options (e.g. Lived Together, Worked Together, From and organization or team, Took a course together, From a summer/study abroad program, Went to school together, Traveled together, In my family, Through a friend, Through Facebook, Met randomly, We hooked up, We dated, I don’t even know this person.)
- Numerical (e.g. trust, coolness, etc)

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Growth Patterns

- Networks Grow in recognizable patterns
  - Exponential
  - Linear
  - Logarithmic

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Public WBSNs: FOAF

- Friend of a Friend (FOAF): a vocabulary in OWL for sharing personal and social network information on the Semantic Web
- Over 10,000,000 FOAF profiles from 8 social networks

Social Networks as Graphs

(i.e. the math)
Building the Graph

- Each person is a node
- Each relationship between people is an edge
- E.g. Alice knows Bob

Graph Properties

- Edges can be directed or undirected
- Graphs will have cycles

Graph Properties

- Centrality
  - Degree
  - Betweenness
  - Closeness
  - Eigenvector centrality
- Clustering Coefficient (connectance)

Small Worlds

- Watts & Strogatz
- Small World networks have short average path length and high clustering coefficients
- Social Networks are almost always small world networks
Making Small World Networks

- Short Average path length
  - Like what we find in random graphs

- High connectance
  - Like what we find in lattices or other regular graphs

Combining Network Features

Start with lattice and randomly rewire $p$ edges

Effects of Rewiring

Computing with Social Networks
Trust

- An Example Close To My Heart
- Given a network with trust ratings, we can infer how much two people that don’t know each other may trust one another

Inferring Trust

- The Goal: Select two individuals - the source (node A) and sink (node C) - and recommend to the source how much to trust the sink.

Using Computations

- More email: TrustMail
- Recommender Systems: FilmTrust
- Browsing Support: SocialBrowsing

FilmTrust

http://trust.mindswap.org/FilmTrust
SocialBrowsing
Future Directions

What happens next in the social network movement?

Sunday, October 17th 2004

Real homework

In it I said we'd like the new Apple mini store look like the Korova Milk Bar from A Clockwork Orange.

Not that I'm complaining. I can certainly imagine hanging out with my droogs in an ultra-top-cube of digital consumerism.

"And we eat in the Korova Milk Bar trying to work out our numbers on what to do with the evening. The Korova sold milk plus milk plus milk, synthetic or otherwise — which was what we were drinking. And this would sharpen you up for a bit of the old ultraviolence."

Although, is really, I think we'd content ourselves with some new iPod accessories.

I guess I'll have to chance to find out for sure if an Apple store opens in Brighton:

"I hear there's a new Apple store opening in London this week. We're thinking of getting some new iPod accessories, what do you recommend?"

Was cool.

18:45pm GMT

Email this to a friend

Download PDF

This page mentions the movie A Clockwork Orange (1971). The average rating for this film is 3 stars out of 5. Your recommended rating from the FilmTrust system is 5 stars.

Personal Details

FilmTrust is my project. Please email me if you have any problems with it: me@mindsoap.org.

Movie Tidbits

Fellini’s films, particularly La Dolce Vita, Jules and the random other popcorn movies.

Personal Options

Update

Jen Golbeck

Username: golbeck

See this person in the network
Two similar algorithms for inferring trust, based on trust values:

- **Binary**
- **“Continuous”**

**Basic structure**:
- Source polls neighbors for trust value of sink
- Source computes the weighted average of these values to come up with an inferred trust rating
- When polled, neighbors return either their direct rating for the sink, or they apply the algorithm themselves to compute a value and return that

**Complexity** $O(V+E)$ - essentially BFS
Email Filtering

- Boykin and Roychowdhury (2004) use social networks derived from email folders to classify messages as spam or not spam
- 50% of messages can be classified