Automated Discovery and Visualization of Communication Networks from Social Media

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Slides available at http://slideshare.net/primath
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Faculty of Management  
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Social Media Lab
Social Media Lab

SocialMediaLab.ca
"Making sense of a networked world"
Growth of Social Media and Social Networks Data

Social Media have become an integral part of our daily lives!

Facebook: 1B users
Twitter: 500M users
Studying Online Social Networks

- Forum networks
- Blog networks
- Friends’ networks (Facebook, Twitter, Google+, etc…)
- Networks of like-minded people (YouTube, Flickr, etc…)
How to Make Sense of Social Big Data?

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Twitter: @gruzd
How to Make Sense of Social Big Data?

Social Big Data -> Visualizations -> Understanding
(Development, Application & Validation)

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How to Make Sense of Social Big Data?

Social Network Analysis (SNA)

- **Nodes** = People
- **Edges /Ties (lines)** = Relations/ “Who retweeted/ replied/ mentioned whom”
Advantages of Social Network Analysis

• Reduce the large quantity of data into a more concise representation

• Makes it much easier to understand what is going on in a group

Once the network is discovered, we can find out:
• How do people interact with each other,
• Who are the most/least active members of a group,
• Who is influential in a group,
• Who is susceptible to being influenced, etc…
Common approach for collecting social network data:

- Self-reported social network data may not be available/accurate
- Surveys or interviews

Problems with surveys or interviews

- Time-consuming
- Questions can be too sensitive
- Answers are subjective or incomplete
- Participant can forget people and interactions
- Different people perceive events and relationships differently
How Do We Collect Information About Social Networks?

• Common approach: surveys or interviews
• A sample question about students’ perceived social structures

Please indicate on a scale from [1] to [5],
YOUR FRIENDSHIP RELATIONSHIP WITH EACH STUDENT IN THE CLASS
[1] - don’t know this person
[2] - just another member of class
[3] - a slight friendship
[4] - a friend
[5] - a close friend


... 


Source: C. Haythornthwaite, 1999
How Do We Collect Information About Online Social Networks?

**Goal:** Automated Networks Discovery

**Challenge:** Figuring out what content-based features of online interactions can help to uncover nodes and ties between group members
Netlytic.org - a cloud-based analytic tool for automated text analysis & discovery of social networks from online communication

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Twitter: @gruzd
How to Make Sense of Social Media Data?

Example: Twitter Network

- Nodes = People
- Ties = “Who retweeted/replied/mentioned whom”
- Tie strength = The number of retweets, replies or mentions
2012 Olympics in London
#tarsand Twitter Community
#1b1t Twitter Book Club
Comments on Instagram: #Canada
Comments on Youtube: Ukrainian news channel
SocialMediaLab.ca

Sharing Biodiversity Heritage through Social Media: Mining Biodiversity’s “Big-Data”

Dr. Anatoliy Gruzd of the School of Information Management and Director of the Social Media Lab at Dalhousie University is the co-lead on one of 14 teams of international researchers that will receive funding from the Digging into Data Challenge, an international competition designed to challenge the research community to investigate how new computational techniques ...
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