Information diffusion in online social networks

Lada Adamic
School of Information, University of Michigan, Ann Arbor

email
instant messaging
phones
blogs
online social networking sites
Questions for this workshop

• How does network structure influence information diffusion?
• How does information diffusion shape networks?
Power laws and information spread on networks

Adamic, Lukose, Puniyani, Huberman, PRE 2001
Information diffusion in blogs

infer most likely information flow path

http://www-idl.hpl.hp.com/blogstuff

Giant Microbes epidemic visualization

Adar, Zhang, Adamic, Lukose, WWE 2004
Communities and discourse

comment thread parody on Jim Henley’s ‘Unqualified Offerings’ Blog

12. Comment by Jon H —
April 8, 2006 @ 9:13 am

Comment flaming other commenter for spelling error, which flame contains the requisite spelling error of its own.

13. Comment by Michigan J. Frog —
April 8, 2006 @ 9:19 am

Accidental double-post.

14. Comment by Michigan J. Frog —
April 8, 2006 @ 9:20 am

Accidental double-post.

15. Comment by Michigan J. Frog —
April 8, 2006 @ 9:20 am

Apology for accidental double post, wasting even more space.
Can we understand community dynamics?

- detecting polarization
- analyzing discourse
- learning what brings communities together online

Adamic & Glance, LinkKDD 2005
1 Digby’s Blog
2 James Walcott
3 Pandagon
4 blog.johnkerry.com
5 Oliver Willis
6 America Blog
7 Crooked Timber
8 Daily Kos
9 American Prospect
10 Eschaton
11 Wonkette
12 Talk Left
13 Political Wire
14 Talking Points Memo
15 Matthew Yglesias
16 Washington Monthly
17 MyDD
18 Juan Cole
19 Left Coaster
20 Bradford DeLong
21 JawaReport
22 Vodka Pundit
23 Roger L Simon
24 Tim Blair
25 Andrew Sullivan
26 Instapundit
27 Blogs for Bush
28 LittleGreenFootballs
29 Belmont Club
30 Captain’s Quarters
31 Powerline
32 Hugh Hewitt
33 INDC journal
34 Real Clear Politics
35 Winds of Change
36 Allahpundit
37 Michelle Malkin
38 Wizbang
39 Dean’s World
40 Volokh
Liberals and conservatives differ in the topics they discuss

Discussion of “forged documents”

Date
# weblog posts
Right
Left
Network of phrases found on the same blogs
Trying to bridge the divide
Opposition to the bankruptcy bill (March 2005)

but, bill was passed nevertheless: Senate 74 - 25, House 302 - 126
How do memes evolve?

02:00 AM Friday Mar. 05, 2004 PST Wired publishes: "Warning: Blogs Can Be Infectious."

7:25 AM Friday Mar. 05, 2004 PST Slashdot posts: "Bloggers' Plagiarism Scientifically Proven"

9:55 AM Friday Mar. 05, 2004 PST Metafilter announces "A good amount of bloggers are outright thieves."

Before lunch: Eytan writes FAQ: Do bloggers kill kittens?

After lunch: Several bloggers title posts ‘Bloggers kill kittens!’
Scoble:
http://scobleizer.wordpress.com/2006/02/13/the-brrreeeport-report/

“Here, let's play a game. Everyone in the world say 'brrreeeport' on your blog and you'll be listed on this Technorati page automatically. Heh. There are also no pages on the Internet linked to for that term on Google, Yahoo, or MSN.”

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**Testing Out The Blog Search Engines - Brrreeeport**

Scoble is tracking the made up word brrreeeport to see how long it takes the major blog search engines to index it. OK, so I'll play along ;-)  


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**Brrreeeport Mucks My Model**

Scoble, Microsoft's resident geek blogger, is doing an experiment. He's asking bloggers to put the word "brrreeeport" in their blogs, and then see how quickly various search engines pick it up. This post is completely outside my normal topical areas and style, but what the heck. Glad to pitch in.

http://scobleizer.wordpress.com/2006/02/13/the-brrreeeport-report/
brrreeeport

I waited forever for this and I was never...

Brrreeeport MindMap

Blogs Like Mine

BRRREEEPORT

BRRREEEPORT What the heck is brrreeeport?

Day Of Ridiculosity

The 'brrreeeport' effect

brrreeeport Would my 'brrreeeport' be ranked higher if I bold or italic it? Related links: Playing with "the man" - Cyberspace People Watcher The brrreeeport report - Robert Scoble
everyone say 'brrreeeport'...

Click here to listen to the brrreeeport track (requires winamp), the voice is my handy speech synth. alternatively (for example, if you dont use winamp), click here to download it first.

What started it all was the following text on 14 February 2006 from Scobleizer’s blog:

"Here, let's play a game. Everyone in the world say 'brrreeeport' on your blog and you'll be listed on this Technorati page automatically. Heh. There are also no pages on the Internet linked to for that term on Google, Yahoo, or MSN."

Some things have changed since, for example Google has indexed thousands of references to brrreeeport

A suggested definition from redcouch is:
Brrreeeport! (noun). The weather news from Antartica, the North Pole or any other frigid zone.

For more information look at the Technorati tag linking to oodles of sites mentioning it.

Hit counter: 16766

comments...

kockey:
Visitors can now leave comments. What other useful bits of information about brrreeeport can I include on this page?
http://www.brrreeeport.org

TagMan:
FYI, as of 5:45 pm ET on Sunday 2/19/06, I’m no longer seeing brrreeeport on the tags page on Technorati.
http://apogee-web-consulting.com/tagman/

feedscott:
going going going going going...
http://www.feedscott.com/

kockey:
Tammy NYP
Tammy NYP · 7 hours ago · No blogs link here
Still another video of style of Tammy NYP is emerged from ours this time the cables comes presumed from Ang the Mo Kio that what is being disturbed … really that new time says someone was Brreeeport square has had to return hardly one and to send

Ask Me!
Pranav ... Blogging · 15 days ago · No blogs link here
Ask Me Tags .NET Articles Ask Me ASP/Scripting Automation BillG Blog brreeeport C# C/C++/ATL Code samples CS CSS Developer Support Excel extensibility GTSC Hot - n - New Humor India InfoPath

Ask Me!
Pranav ... Blogging by pranavwagh · 15 days ago · 18 blogs link here
Ask Me Tags .NET Articles Ask Me ASP/Scripting Automation BillG Blog brreeeport C# C/C++/ATL Code samples CS CSS Developer Support Excel extensibility GTSC Hot - n - New Humor India InfoPath
Gunes Erkan & Drago Radev:
LexRank: applying PageRank to a textual similarity matrix selects the best summary blog posts that are good summaries tend to occur early on
Networks and viral marketing diffusion with costs

- Some people recommend much more enthusiastically than others
- Recommendation cascades power-law distributed
- Hubs’ influence is limited
- Peer pressure is limited
- Links may weaken from overuse

Leskovec, Adamic, Huberman, EC ‘06
recommendation network for a single anime DVD

- purchase following a recommendation
- customer recommending a product
- customer not buying a recommended product

incentives can change the shape of a network
recommendation success 
by book category

• consider successful recommendations in terms of
  – av. # senders of recommendations per book category
  – av. # of recommendations accepted

• books overall have a 3% success rate
  – (2% with discount, 1% without)

• lower than average success rate (significant at p=0.01 level)
  – fiction
    • romance (1.78), horror (1.81)
    • teen (1.94), children’s books (2.06)
    • comics (2.30), sci-fi (2.34), mystery and thrillers (2.40)
  – nonfiction
    • sports (2.26)
    • home & garden (2.26)
    • travel (2.39)

• higher than average success rate (statistically significant)
  – professional & technical
    • medicine (5.68)
    • professional & technical (4.54)
    • engineering (4.10), science (3.90), computers & internet (3.61)
    • law (3.66), business & investing (3.62)
professional and organized contexts

• Some organized contexts other than professional also have higher success rate, e.g. religion
  – overall success rate 3.13%
  – Christian themed books
    • Christian living and theology (4.7%)
    • Bibles (4.8%)
  – not-as-organized religion
    • new age (2.5%)
    • occult spirituality (2.2%)

• Well organized hobbies
  – books on orchids recommended successfully twice as often as books on tomato growing
regressing on product characteristics

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<td>( \ln(t) )</td>
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significance at the 0.01 (***) , 0.05 (**) and 0.1 (*) levels

small tightly knit communities purchasing expensive products
conclusions

• information diffuses on networks
  – path is influenced by structure
  – measured network is influenced by diffusion

• different interests/products bring people together

• incentives can modify social network structure
  – positively (new connections)
  – negatively (weakening existing connections)