

The Effect of Gossip on Social Networks

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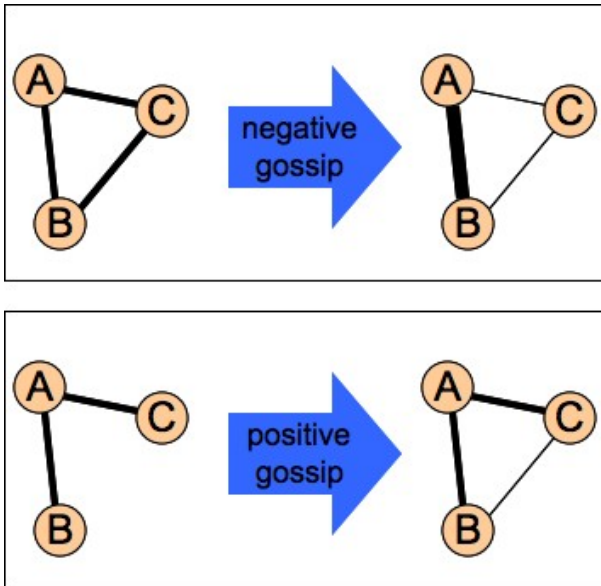


Fig. 1. A model for gossip

Abstract—In this project we look at the effects of gossip spread on social network structure. We define gossip as information passed between two individuals A and B about an individual C who is not present, which has the potential to affect the strengths of all three relationships A-B, B-C, and A-C. This work is novel in two respects: first, there is no theoretical work on how network structure changes when information passing through a network has the potential to affect edges not in the direct path, and second while past studies have looked at how network structure affects gossip spread, there is no work done on how gossip spread affects network structure.

Index Terms—ossip, Social Networks, Network Dynamicsossip, Social Networks, Network DynamicsG

I. INTRODUCTION

Please see Fig.1.

II. MODELS

A. NULL Model

B. Spreading Model

III. ANALYZING NETWORKS

Analytics

IV. SIMULATIONS

V. FUTURE WORKS

Simple:

- drop connections if they fall below a certain threshold
- in model2: have 'impact' of gossip change as you go down with each step away from original gossiper
- in model2: if A gossips to five secondary individuals (B1,B2,...) about C, does A-C increase 5x over?
- on-random node choice: pick nodes with respect to their overall connectedness (either picking strongly or weakly connected individuals more)
- on-random edge choice: stronger (or weaker) edges are more likely to have gossip passed along them

Alternative gossip rules are as follows:

- try positive (instead of negative) gossip: pick V-shaped connection (see figure), add B-C connection
- possibly strengthen A-B since gossip increases trust. Alternatively assume that if B shares with A positive gossip about C, A diverts time from her relationship with B and starts hanging out with C, so weaken A-B instead.
- start from a sparse random network and see if we get a complete network?
- NOTE: is this a reasonable model for positive gossip? if nodes are only increased in strength, network will never converge...
- how do networks resulting from positive vs negative gossip differ?
- (a priori expect that positive gossip will result in the network becoming more connected)
- combined gossip types: pass both positive and negative gossip through network, vary
- if A gossips to B about C: B weakens A-B and strengthens B-C

TYPE	NUM-NODES	AVG-DEGREE	ALPHA	WHO	DONE?
small-world	50	5	?	?	No
small-world	50	10	?	?	No
small-world	200	5	?	?	No
small-world	200	10	?	?	No
spatially-clustered	50	5	?	?	No
spatially-clustered	50	10	?	?	No
spatially-clustered	200	5	?	?	No
spatially-clustered	200	10	?	?	No
random	50	5	?	?	No
random	50	10	?	?	No
random	200	5	?	?	No
random	200	10	?	?	No

- let all links (friendships) grow over time according to some function. gossip events change link location on curve (negative moves down, positive moves up).

Adding heterogeneity:

- individual variation: tendency to gossip, gossip target, impact of gossip
- individual behavior: individuals can choose to pass on the gossip, ignore it, or reject the gossiper and sever the connection
- How do individual properties (e.g. range of social circle, poverty, wealth, the information itself, or geographic location) speed up or slow down the spread of gossip?
- Can individuals influence their location in a network (e.g. increase centrality) by changing their gossiping frequency?

VI. CONCLUSIONS

Conclusions

VII. ACKNOWLEDGMENTS

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