Rumor Dissemination in Complex Networks
CS785A Project Proposal

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I. INTRODUCTION AND MOTIVATION

A. Introduction

Rumor is indeed a very important aspect of social interaction. It's so important that it can even shape public opinion. In the light of it, a canard can quite easily cause social panic and impact the well being of the society.
The way rumors have spread over the years has changed drastically. From mouth to mouth, to telephone,messages,e-mail,blogs and especially social network. With the increasing prevalence of new media, which has simplified the process of create,modify and share. People can acquire as well as spread 'the word' with much faster velocity.

B. Motivation

The vastness and influence of rumors over our day to day life has elevated our interest in further investigating the same. The number of users currently involved in this complex network of social media is easily over 2 Billion. Therefore it seems important to know what factors help curb a rumor or rather spread it at even faster rates.

II. WORK SO FAR ...

A lot of work, with different levels of granularity, in the field of rumor diffusion has been proposed(see [2] and [3]), each one having its own importance. But most of them has been either focused on the spread of the rumor or about the complex topological network in which the rumor propogates. We wish to focus on strategies that will help in effectively negating the diffusion of rumor in the evolutionary game paradigm.

III. OUR APPROACH

A. Objective

We wish to investigate rumor diffusion process in an evolutionary game framework. Our approach will be based on the paper by Dadan Li et al [1], but we'll be working on a different data set. We hope to inculcate some aspects and result beyond the scope of the paper but, only if time permits. We'll be using three different strategies with each having a different punishment cost(determines the number of times a person in the system is willing to spread the rumor) and risk coefficient(spreading canards can affect the ties between neighbour nodes(i.e. people) preventing from further diffusion). There should exist some optimal risk coefficient and punishment fraction that could help curbing the rumor at the nodes. We should notice that, by constantly updating the strategy of weaker and stronger ties while spreading the rumor to neighbor nodes can efficiently suppress further rumor propagation(bringing in mixed evolutionary game strategies).

B. Datasets

Dandan Li et al uses data from E-mail, POK-dataset and Facebook New Orleans. We'll be using Data from Twitter, Blogspot and Facebook New Orleans from Hernan Makse's(Levich Institute,NY 10031)webpage : http://www-levich.engr.ccny.cuny.edu/webpage/hmakse/software-and-data/

IV. REFERENCES

[1] : Dandan Lia, Jing Maa, Zihao Tiana, Hengmin Zhub, An evolutionary game for the diffusion of rumor in complex networks, Physica A 433(2015) 51-58
[2] : Y.L. Zan, J.L. Wu, P. Li, Q.L. Yu, SICR rumor spreading model in complex networks: counter attack and self-resistance, Physica A 405 (2014) 159170.
[3] : J. Kostka, Y.A. Oswald, R. Wattenhofer, Word of mouth: rumor dissemination in social networks, in: Lect. Notes. Comput. Sci, vol. 5058, 2008,pp. 185196.