Accepted Manuscript

Modelling the cooperative and competitive contagions in online social networks

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PII: S0378-4371(17)30421-1
DOI: http://dx.doi.org/10.1016/j.physa.2017.04.129
Reference: PHYSA 18231

To appear in: *Physica A*

Received date : 26 November 2016

Please cite this article as: Y. Zhuang, et al., Modelling the cooperative and competitive contagions in online social networks, *Physica A* (2017), http://dx.doi.org/10.1016/j.physa.2017.04.129

1. This paper proposes a novel information diffusion model (IS_1S_2R), to model the interactive diffusion of two different pieces of information on the online social networks, by splitting the agents into four parts-(Ignorant-Spreader I-Spreader II-Stifler).

2. The proposed IS_1S_2R model extends the interactive diffusion to be both "cooperative" and "competitive", by different setting of the parameters, and models the interactive diffusion of the $\boldsymbol{k}_{th}$ community of the network, since online social network is scale-free.

3. Empirical studies based on a real data crawled from "Weibo", the most popular micro-blogging community in China, reveal that the parameters have different effect on the cooperative diffusion process and the competitive diffusion process, which can provide important insights in a broad range of settings.