

Some rumor spreading models on complete graphs and Erdős–Rényi graphs

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Abstract

In this thesis we study three rumor spreading models, the Daley–Kendall model, Maki–Thompson model and Daley–Kendall model with memory. The main area of use for rumor spreading models is naturally to describe how a rumor is spread in a population but can be used in other areas as well, for example the spread of viruses on the Internet. Rumor spreading is closely related to epidemics as the rumor can be seen as an infection. Due to the complexity of real world networks some simplified models for the networks are required and we choose to consider both homogeneously mixed populations as well as Erdős–Rényi networks for the rumor to be spread in. The rumor spreading models we study all divide the population into three subgroups; ignorants, spreaders and stiflers. An ignorant is an individual who is unaware of the rumor, a spreader is an individual who actively tries to spread the rumor and a stifler is an individual who is aware of the rumor but no longer tries to further spread the rumor.

The main problem to be answered in this thesis is the number of individuals who know about the rumor when there is no one left who is interested in further spreading the rumor. This number depends on the size of the population, the initial number of individuals who knows about the rumor, as well as the average number of friends the individuals have. We also examine when people first stop being interested in spreading the rumor further. We make use of deterministic models and stochastic models as well as simulations to study the rumor spreading models.

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