

Performance and Simulation of Social Networks

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1 Abstract

2 Background

This report focuses on simulating simple social media networks, and evaluates the effectiveness of a network given parameters of that network. Each network consists of a group of users, who may follow each other. This has been represented in code as a directed graph of users. Upon input from either a file, or interactively, users can be made to create posts. These posts are initially liked by the user, and then propagate through the network when the network is updated. Eventually, the post has propagated through as much of the network as possible, and the next post is then loaded. This means that there is only one post at a time. Posts propagate through the network following the below algorithm:

1. If a user has liked the post in the previous timestep, their followers have a probability of liking the post. This is determined by sampling from a Bernoulli distribution with constant global probability *prob_like*.
2. If a user likes a post in the current timestep, they have a chance of following the original poster. This is sampled using the same technique as above, with global probability *prob_foll*.
3. A post can have an associated clickbait factor, c_f . This factor increases the probability of liking a certain post via the equation: $prob_like_{current} = clamp(prob_like \times c_f, 0, 1)$. The default clickbait factor is 1.

3 Methodology

4 Results

5 Conclusion and Future Work