

## INTRODUCTION

Networks that constantly transmit information and change structure are becoming increasingly prevalent. However, traditional privacy models are designed to protect static information. Hence, in this paper, we formally define the concept of dynamic privacy, present two novel perspectives, privacy propagation and accumulation, on the way private information can spread through dynamic cyberspace

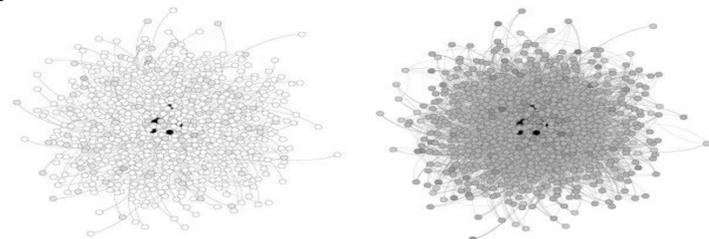
## AIM

1. Analyze the epidemic property of privacy distribution and collection in a dynamic environment. present privacy preserving methods in the dynamic environment.
2. almost all the information propagation paths are simulated network which constructed by the researchers' experience and common sense. However, what is a real information propagation path in online social network. To study the propagation of privacy and normal information in online social network. We should first get the structure of propagation path in it.

## METHODS

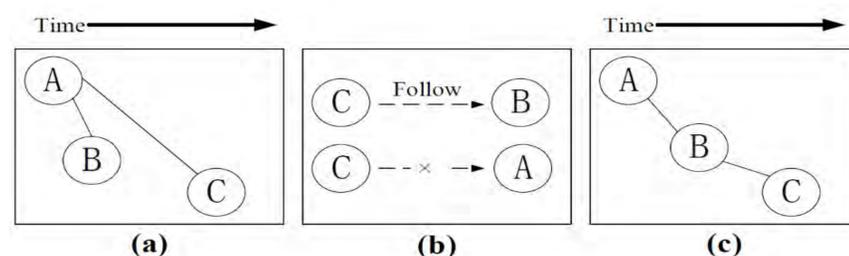
### Experiment 1: privacy propagation model in online social media:

The first experiment is to build a privacy propagation model. We build this model by applying the traditional epidemic model into this area and add the accumulation of privacy [1].



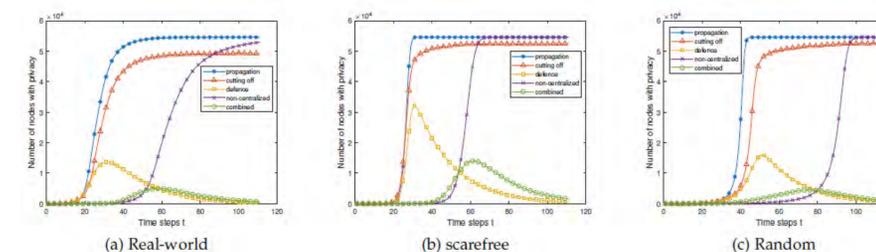
### Experiment 2: rebuilding the real propagation path in social media:

The first experiment is to rebuild the real information propagation in social media by using the follower-followee relationship of each user in the propagation path [2].

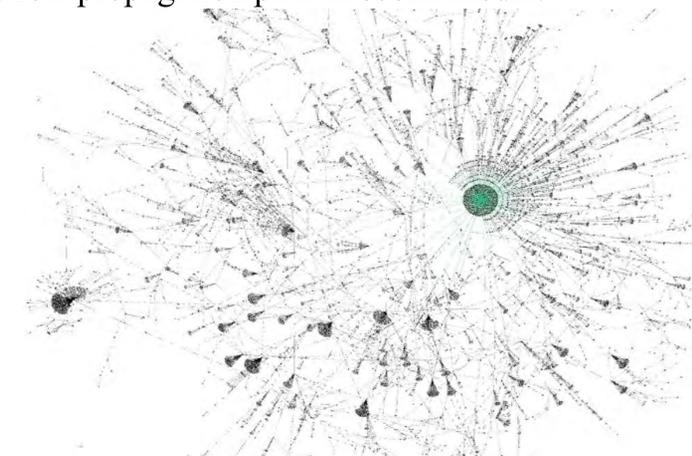


## RESULTS

1. We takes our privacy propagation model in three kinds of networks: the real network collected from the social media, the scale-free network and random network which has the same nodes and edges with the real network.



2. We rebuild the real propagation path in social media.



## CONCLUSIONS

1. The privacy propagation model in social media is similar with the epidemic models in human beings or animals.
2. The information propagation model are based on the researchers' common sense and experience. It is not suitable for the real propagation path.

## References

- [1] t. zhu, J. Li, X. Hu, P. Xiong and W. Zhou, "The Dynamic Privacy-preserving Mechanisms for Online Dynamic Social Networks," in *IEEE Transactions on Knowledge and Data Engineering*, doi: 10.1109/TKDE.2020.3015835.
- [2] Vosoughi, Soroush, Deb Roy, and Sinan Aral. "The spread of true and false news online." *Science* 359.6380 (2018): 1146-1151.