

INTRODUCTION

As we have shown in the last year, we have rebuild the propagation path of messages in social media, we try to find the difference of propagation process between the normal news and private information. Therefore, in this poster, we studied exactly how private information does spread through social media needs to be studied empirically and compared with what we know about the diffusion of other types of information.

AIM

1. Study how one delineate private information from the clutter of other information on social media?.
2. Propose an extended classification algorithm for distinguishing between news and private information.
3. A privacy preservation method for social networks that blocks a number of users to stop the propagation of private information.

Experiment

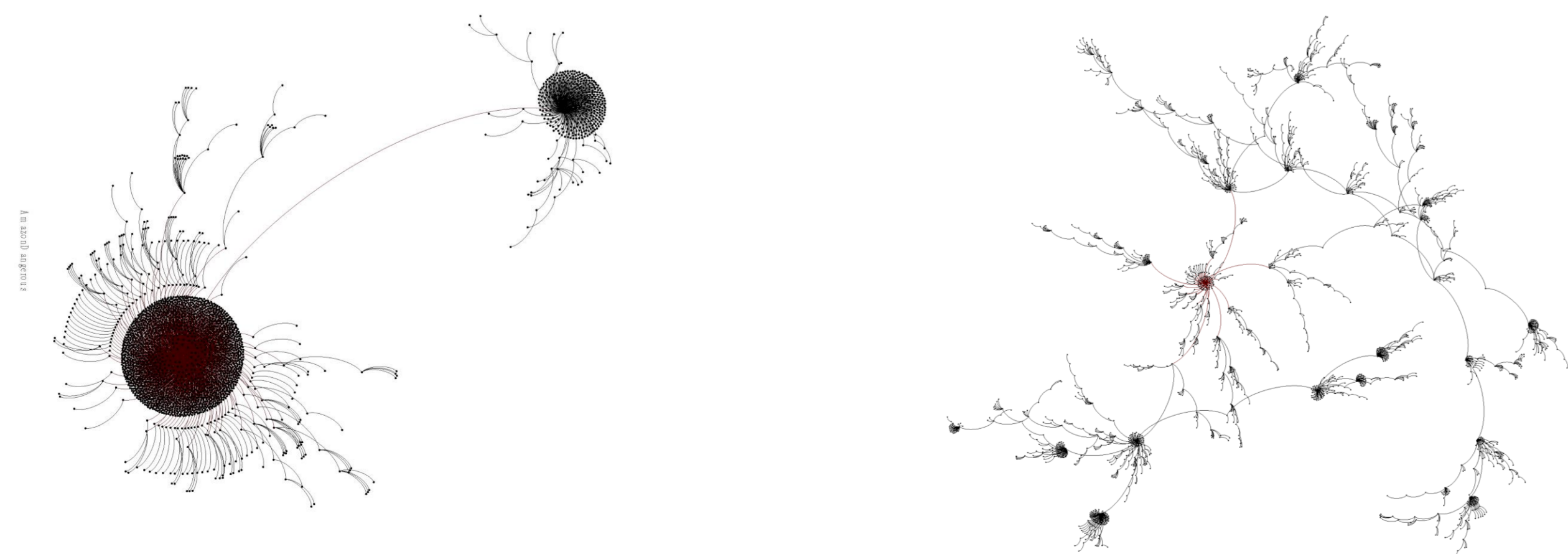
Experiment 1: comparison of privacy information and normal news in topological structure.

Experiment 2: classify the news and private information by using the Graphsage algorithm [1].

Experiment 3: use the nodes-remove mechanism removing CI nodes [2] to achieve prevent users' privacy information from the propagation through the social media.

RESULTS

1: The figure below shows that privacy propagation path has more star structure in the network while the normal information propagation path has fewer. However, the star structures in privacy propagation path is smaller than them in the normal information propagation.

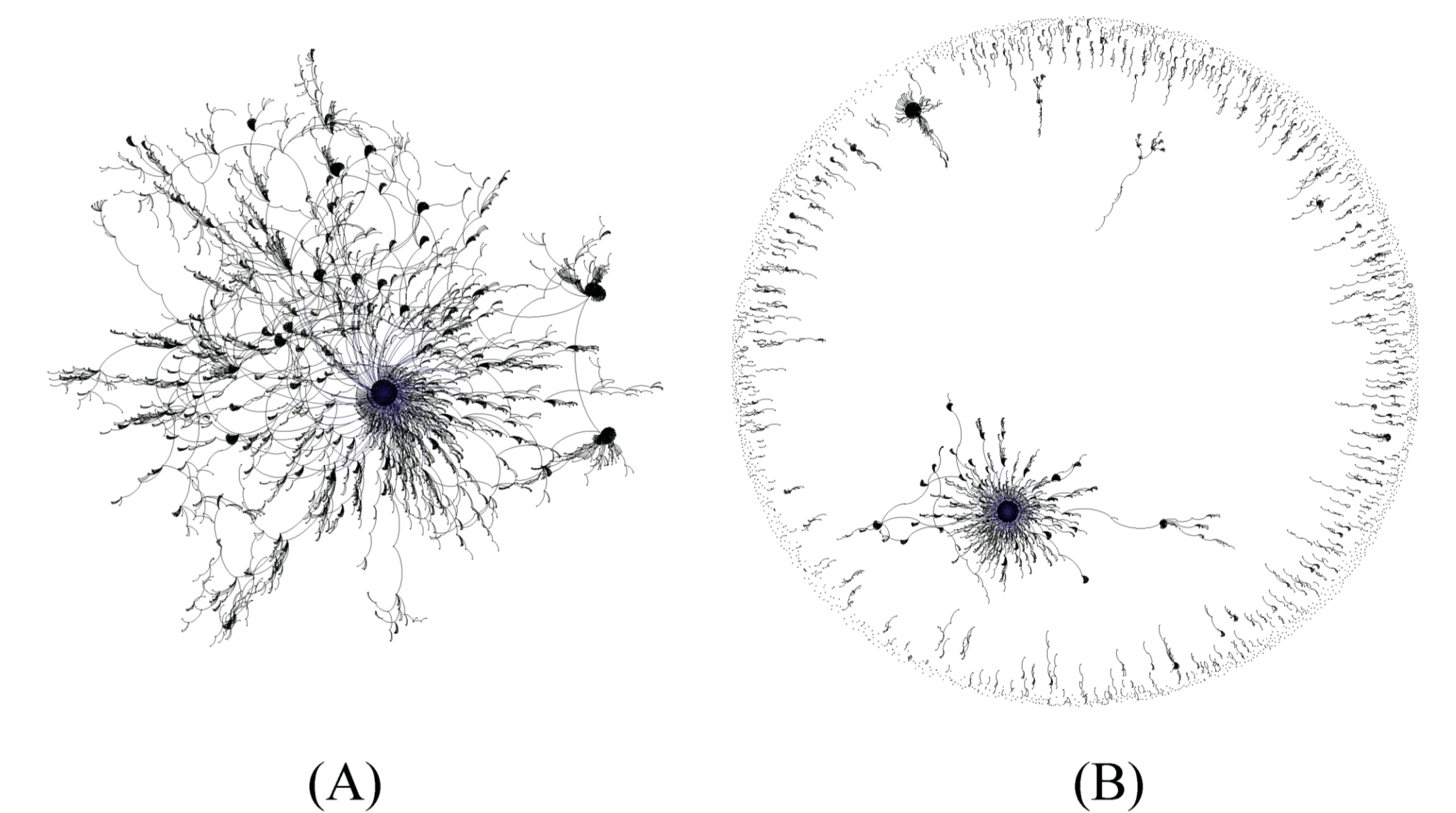


RESULTS

2. The figure below shows the result of our classification through these two categories of networks. The accuracy of training data is 100 percent while it is over 80 percent. It shows that the GCN algorithm could classify these two categories of network.



3. Sub-figure A is the original propagation path of the privacy information. Sub-figure B is the propagation path in which we remove the high influence nodes from the graph. In this case, the original propagation path had spread to 6159 nodes while in sub-figure B had only 1794 nodes.



CONCLUSIONS

1. The normal news and the private information propagation path are similar in topological features but different in propagation features..
2. The Graphsage mechanisms are efficient in classifying these two categories of network and the CI nodes in stopping the propagation of private information propagation.

References

- [1] W. L. Hamilton, R. Ying, and J. Leskovec, "Inductive representation learning on large graphs," Proceedings of the 31st International Conference on Neural Information Processing Systems, 1025—1035, 2017.
- [2] Morone F , Makse H A . Influence maximization in complex networks through optimal percolation[J]. Nature, 2015, 524(7563).