**CONCLUSIONS**

In this paper, we study the problem of mining fraudsters and fraudulent strategies in a large-scale mobile network. By analyzing a one-month complete dataset of telecommunication metadata in Shanghai with 698 million call logs between 54 million users, we find that fraudsters and non fraudsters behave differently on communicating with others. In addition, fraudsters have preferences over users’ age and activity in phone communications when they choose targets. Inspired by our exploratory analysis, we then propose a novel semi-supervised model to distinguish fraudsters from non-fraudsters. Experimental results demonstrate that our model achieves a significant improvement comparing with several state-of-the-art baseline methods.

As for the future work, it is interesting to think about how to discover a fraud group, instead of an individual fraudster, consists of fraudsters with different roles and duties. Based on this, the collaboration patterns of different fraud groups can be disclosed. Besides, one can extend our work by further considering geographical information of users, studying offline behaviors of fraudsters like how they move around the city.

Our work is limited by the data that we have access to. Alt ough China Telecom is a major service provider and Shanghai is an important global city, the selection bias in our data may limit the generalize ability of our work.

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