

Cross-Site Prediction on Social Influence for Cold-Start Users in Online Social Networks

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ABSTRACT

Online social networks (OSNs) have become a commodity in our daily life. As an important concept in sociology and viral marketing, the study of social influence has received a lot of attentions in academia. Most of the existing proposals work well on dominant OSNs, such as Twitter, since these sites are mature and many users have generated a large amount of data for the calculation of social influence. Unfortunately, cold-start users on emerging OSNs generate much less activity data, which makes it challenging to identify potential influential users among them. In this work, we propose a practical solution to predict whether a cold-start user will become an influential user on an emerging OSN, by opportunistically leveraging the user's information on dominant OSNs. A supervised machine learning-based approach is adopted, transferring the knowledge of both the descriptive information and dynamic activities on dominant OSNs to emerging OSNs. Descriptive features are extracted from the public data on a user's homepage. In particular, to extract useful information from the fine-grained dynamic activities which cannot be represented by the statistical indices, we use deep learning technologies to deal with the sequential activity data. Using the real data of millions of users collected from Twitter (a dominant OSN) and Medium (an emerging OSN), we evaluate the performance of our proposed framework to predict prospective influential users. Our system achieves a high prediction performance based on different social influence definitions.

CCS CONCEPTS

• Information systems → Social networks.

KEYWORDS

Social Influence, Cold-Start Users, Cross-Site Linking

ACM Reference Format:

Qingyuan Gong^{1,2}, Yang Chen^{1,2}, Xinlei He^{1,2}, Yu Xiao³, Pan Hui^{4,5}, Xin Wang^{1,2}, Xiaoming Fu⁶. 2022. Cross-Site Prediction on Social Influence for

Cold-Start Users in Online Social Networks. In *Companion Proceedings of the Web Conference 2022 (WWW '22 Companion)*, April 25–29, 2022, Virtual Event, Lyon, France. ACM, New York, NY, USA, 1 page. <https://doi.org/10.1145/3487553.3524187>

ACKNOWLEDGMENTS

This work is sponsored by National Natural Science Foundation of China (No. 62072115, No. 71731004, No. 61602122, No. 62102094), the Research Grants Council of Hong Kong (No.16214817), the 5GEAR project and FIT project from the Academy of Finland, the EU H2020 COSAFE project, and China Postdoctoral Science Foundation (No. 2021M690667). Yang Chen is the corresponding author. The full paper has been published in ACM Transactions on the Web in 2021.

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WWW '22 Companion, April 25–29, 2022, Virtual Event, Lyon, France.

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ACM ISBN 978-1-4503-9130-6/22/04.

<https://doi.org/10.1145/3487553.3524187>