Silent Users in Online Social Networks and Delurking Mechanisms

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ABSTRACT

The notion of lurking is more and more used these days. Lurkers (also called silent users) are Online Social Networks (OSNs) members, who consciously decide to observe, but not to participate. There is an emerging need to delurk these users and utilize this knowledge in computer science fields. In our work, we present the notion of lurkers in on-line social networks and the different categories of delurking mechanisms, including influence maximization.

CCS CONCEPTS

• Information systems applications • Collaborative and social computing systems and tools • Social networking sites

KEYWORDS

OSN, lurkers, delurking, influence maximization, silent users

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1 THE NOTION OF LURKING

On-line social networks (OSNs) are nowadays used in an everyday basis. However, there are users who decide not to contribute at all or contribute a little in social media platforms. These users are called silent users or lurkers. Lurkers can be considered either negatively (in case they consume information without sharing any content with the community) or positively (in case they are fresh OSN users or in case they have an opinion that they can express if they are motivated) [5].

Delurking is very important in OSNs, as the latter would be of no use without available content [1]. Moreover, related works have proved that when the opinion of silent users is not considered, fake news are produced [5]. On the other hand, influence maximization is also directly related to OSNs. Influence maximization can be used for lurking-based analysis, in which lurkers are regarded as the target of the influence maximization process.

2 DELURKING MECHANISMS

We identified two main categories of delurking mechanisms: rewarding mechanisms and influence maximization (IM). Rewarding mechanisms include different categories such as gamification, blockchain and usage of badges. Blockchain-based social media have been proposed as the future of social networking, where users are on one hand rewarded for their content, while on the other, a level of privacy can be ensured [2]. In addition to blockchain, Game Theory is used to mathematically conceive behavior in strategic situations, in which one person's actions depend on choices made by others [4]. Users get directly benefited by taking part in missions, while they try to cooperate with their neighbors to achieve a higher rank. In this way, lurkers are approached by active users for a collective purpose that unlocks more opportunities in the network for both categories. Last, IM is a problem of finding a small subset of nodes in a social network that can maximize the dissemination of information very quickly and efficiently within the network. With the use of IM techniques, lurkers can be approached from influential users with the aim of convincing them to increase their participation in the network [3].

Challenges include hidden user actions, which are not associated with the obvious intermediate relationships between the users and privacy concerns. To sum up, in this work we presented ways of recognizing lurkers in OSNs and we identified delurking mechanisms including IM. In our future work, we intend to provide a comparison of different delurking mechanisms and investigate their effectiveness in real time scenarios.

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