STUDYING THE PROCESSES OF INFORMATION PROPAGATION IN YOUTUBE VIDEO HOSTING SOCIAL NETWORK

Didorenko A.V., Progulova T.B. [1]

Joint Institute for Nuclear Research, Laboratory of Information Technologies, Russia, 141980, Moscow region, Dubna city, 6 Joliot-Curie st., +7(964)780-27-04, alx.did.00@gmail.com
[1]Dubna State University, Russia, 141980, Moscow region, Dubna city, 19 Universitetskaya st., +7(963)788-60-75, progulova@yahoo.com

Studies of diffusion dynamics have shown that the structure of a social network can have a key influence on emerging patterns of collective behavior. The theory of complex networks makes it possible to develop analytical and numerical methods for quantifying, predicting, maximizing, or neutralizing propagation [1]. Currently, online platforms such as YouTube play an important role in the information propagation and have a significant impact on the formation of public opinion. The paper investigates the influence of structural features of the YouTube video hosting social network on the processes of information propagation. The nodes of this network are YouTube channels, and the directional links are subscription relationships. The study consists of four main stages: (1) sampling using scanning of publicly available YouTube data; (2) studying the network structure; (3) investigating the impact of community structure on propagation, and (4) analyzing strategies for selecting propagation vertices to maximize network coverage.

The results showed that the studied network of YouTube channels is scale–free, belongs to weakly dissortative (structural dissortability) and has well-defined community structures and core-periphery. To model information propagation, a hierarchical cascade model based on network connections was used, taking into account community structures and core-periphery [2]. It was found that the initiation of the propagation process from the central vertices does not maximize the information coverage, but in some cases significantly reduces the propagation time. The modeling also showed that when the structure of communities weakens, the scale of propagation increases, which allows us to talk about communities as a «trap» in information propagation.

The results obtained can be the basis for solving the problems of finding super-spreaders, creating effective strategies for blocking negative influence, forming sets of the most influential vertices for solving the problems of propagation and blocking.

References

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