

# Developing the Algorithm for an Online Community Monitoring with the Aim of Manipulation Detection

Andrij Peleschyshyn<sup>1</sup>, Zoriana Holub<sup>2</sup>

<sup>1</sup>Social Communication and Information Activities Department, Lviv Polytechnic National University, UKRAINE, Lviv, S. Bandery street 12, E-mail: apele@gmail.com

<sup>2</sup>Social Communication and Information Activities Department, Lviv Polytechnic National University, UKRAINE, Lviv, S. Bandery street 12, E-mail: zorianaholub@gmail.com

*Abstract – In this paper the algorithm for online community monitoring with the aim of informational and psychological manipulation detection is suggested. The algorithm is designed to boost the efficiency of the process of detecting manipulation. It consists of three block of actions directed at detecting suspicious profiles, sorting and detecting manipulation.*

Key words – online community, informational and psychological manipulation, suspicious profile, manipulation tactic.

## I. Introduction

Dissemination and search for information as well as communication takes place mostly in online communities. Accessibility, usability, interactive and dynamic nature of online communities makes them a popular platform for interactions. Online communities offer a wide range of opportunities among them to support and propagate an idea, to market products and services or to develop software. A lively online community is a secure support network, a source of new ideas and a powerful marketing tool.

Due to the fact that communities are popular communication means and are characterized by a high level users' trust to its content, they are often used for practicing such an undesirable action as informational and psychological influence on a recipient.

For a long time protection against psychological manipulations is a popular research area. Nevertheless there exist a great amount of scientific investigations and works in the area, the problem of manipulation in online communities is still unsolved. The reason for this is the fact that as a result of transferring for the one environment to another occurred changes in the process and means of communication.

Methods of defending against manipulation in real environment, for instance dialogs, speeches, paper publications are inefficient when applied in the virtual environment. Means and methods for detecting manipulation in online communities are to be devised. Taking into account the great number of discussions in online communities and the high speed of new publications, the algorithm for monitoring discussions before detecting manipulation is required. Discussions monitoring increases efficiency of the system for detecting manipulation to the great extent. Therefore the problem of

designing the algorithm for monitoring discussions is of great importance.

## II. Characteristics of online communities as communication platforms

In light of social dynamics both online and real communities have much in common. The aim of any community is to develop a relationships network of people, who are connected as a result of shared hobbies, religious beliefs, political attitudes, professional connections, serious disease, neighborhood etc.

The difference lies in the fact that online communities disregard geographical location of the members. In other words they give an opportunity for members from different countries to communicate with each other. There is a flavor of anonymity in communication between online community members as it is often a complicated task to identify a real person behind the virtual profile. Meanwhile, interaction in online communities is characterized with a trust and empathy.

The notion of online communities is difficult to define as it has a multidisciplinary nature.

Online community is a group of people, who regularly interact with each other mainly with the aim to exchange information with the shared interest. [1].

Online community is an online platform, to which members feel affiliation, where common interests and topics are discussed. Early online communities were formed on the basis of mailing lists or bulletin boards, however contemporary ones are using web-technologies [2].

On the Internet there are different platforms for online communities, for example chats, forums, social networks etc. They are different in technical realization, characteristics, organization structure and interface. In this research online communities realized by means of web-technologies are considered.

## III. Algorithm for an online community monitoring

A large scope of information and high speed of new publication make the process of detecting informational and psychological manipulation time- and efforts-consuming. With the aim to decrease the number of overlooked manipulation precedents as well as with the aim to detect manipulation before it achieves its goal, an algorithm for monitoring an online community is developed.

The algorithm constitutes three blocks. The first block consists of the actions that are aimed at detecting suspicious members of an online community. This is carried out by means of analyzing profile and communication peculiarities [3]. A member is claimed suspicious, when he/she has an undeveloped profile. This is deduced from the number of member's photos, friends as well as from comparing members nicknames. Another action, namely, detecting unreliable demographic data is based on the analyzing of content created by these members. [4].

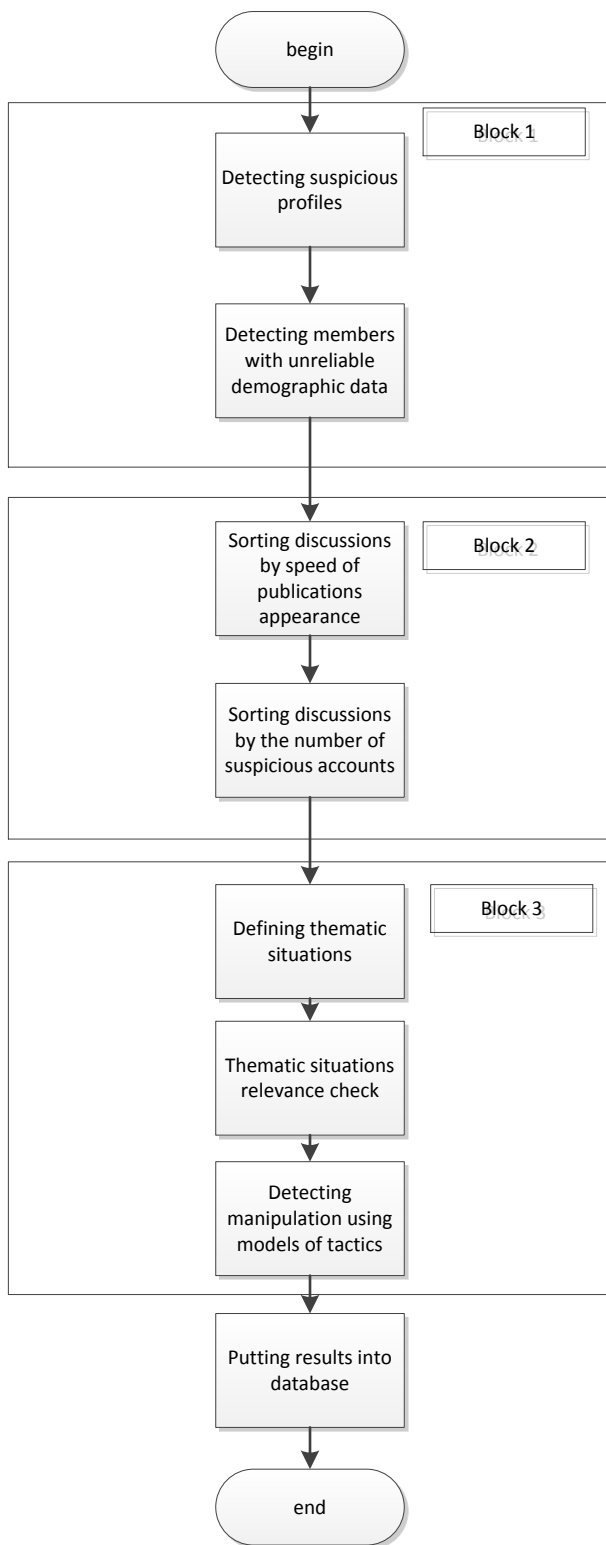


Fig. 1. The flow chart of the algorithm of monitoring

To the second block belong actions directed at creating a queue of discussions. Sorting discussions by speed of their appearance and by the number of suspicious accounts makes it possible to start detecting manipulation at hot spots of communication in online communities.

The third block is aimed at detecting trains of messages that hinder an effective information exchange. Such

messages hamper information perception, involve in discussions on irrelevant topic or are elements of manipulation tactic. Defining thematic situations precedes the check for relevance of thematic situations to the discussion topic. [5]. After that the check for initiated in a discussion manipulation tactics takes place.

Finally, the results of the community monitoring are stored in the database.

## Conclusion

Informational and psychological manipulation is dangerous for individual participants as well as for organizations that take part in information exchange in online communities. Since the content of an online community is immense and updates on fast pace, a prerequisite for efficient manipulation detecting is its automatization.

Taking into consideration peculiarities of communication in online communities, the algorithm for monitoring an online community with the aim of manipulation detection is devised.

Suggested algorithm is a first step to the entire automatization of the process of detecting informational and psychologic manipulation in online communities. It contributes to the boost of moderation efficiency as well as increases popularity and security of online communities.

## References

- [1] Korzh R.O. Analysis of Integrity and Coverage Completeness of the Informational Image of a Higher Education Institution. / R.O. Korzh, A.M. Peleschyshyn, Z. D. Holub // In: proceedings of the XIIIth International Conference. TCSET'2016, February 23–26, 2016, Lviv–Slavske, Ukraine. – Lviv, Publishing House of Lviv Polytechnic, 2016. – Modern problems of radio engineering, telecommunications and computer science. – pp. 825-827.
- [2] Z. D. Holub. Detcting manipulative influence in the Internet-communication by means of transactional analyses / Holub Z. D., Peleschyshyn A. M. // Materials of the 4-th international scientific conference «Information, Communication, Society 2015». – Lviv-Slavske, 2015. – pp. 52-52.
- [3] A. Peleschyshyn Methods of Real-time Detecting Manipulation in Online Communities / I. Holub, Z. Holub // Materials of CSIT 2016. Lviv, Ukraine: Lviv Polytechnic Publishing House, 2016, – P. 15-17.
- [4] Yu. O. Syerov Yu. O. The computer-linguistic analysis of socio-demographic profile of virtual community member. / Yu. O. Syerov, A. M. Peleschyshyn, S. S. Fedushko // Int. J. of Computer Science and Business Informatics. – 2013. – V. 4, No 1. 1-13.
- [5] The cataloging of virtual communities of educational thematic / R. Korzh, A. Peleschyshyn, Yu. Syerov, S. Fedushko // Webology 2014 – Vol. 11, № 1 – Available at: <http://www.webology.org/2014/v11n1/a117>.