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INTELLECTUALIZATION OF THE SOCIOMETRIC DATA PROCESSING OF MEMES WITHIN VIRTUAL COMMUNICATION STRUCTURE

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Abstract

The current state of IT development makes the formation of a new type of society relevant in an informational sphere, as well as digital. Virtual communication remains its most important part. The network of these communications creates a new virtual space – Internet. Internet is often concerned as a specific communication medium that gives to people opportunity to communicate with each other on a global scale. Internet is progressively reaching all the traditional media in the processes of forming mass consciousness, public opinion, informing about current events, activities of public authorities and its institutions, reflecting public reaction to decisions and actions of authorities, disseminating political, socio-economic, legal and cultural ideas and knowledge. One of the important phenomena that embody the features of informational, virtual processes of the 21st century is Internet memes. The paper considers the issue of a theoretical and methodological description of an artificial intelligent system for monitoring Internet memes in virtual communication. Along with traditional approaches to the social sciences (systemic, sociological), theories of artificial intelligence will be in demand – Machine Learning (ML), Deep Learning (DL), Data Mining (DM), Text Mining (TM), a self-learning convolutional neural network. The basis for constructing an original monitoring system is the Memometries software product developed by research group. The article describes its functionality: preserving technical characteristics and tagging of Internet meme, forming primary database of Internet memes, creating queries to the primary database.

Keywords: Communication, internet meme, methodology, virtual social network

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1. Introduction

Modern communications have largely moved into the virtual environment. Its features require deep research due to the fact that these communications and their content significantly affect social processes.

One of the ways of such communications is a meme, or rather an Internet meme. Memes in the classical sense are units of cultural information transmitted from person to person through imitation, replication. In scientific use, the term meme was coined by evolutionary biologist Richard Dawkins (1976) in The Selfish Gene. The reader's work in mimetics also includes the works of Richard Brodie (1996) and Douglas Rushkoff (2003). But the approach they developed has exhausted the possibilities of memetics.

Internet memes have their own specific form and distribution channel – Internet. These memes are designed to disseminate social information.

The number of Internet memes is growing rapidly, although it has a poorly structured data set. There is a real problem not only of recognizing them, but also of classification for automated processing even within a thematic cluster. In fact, we are dealing with an open, constantly replenishing system, not only in content, but also in genre variety (slogans and "photo-toads", viral videos and parody illustrations, melodies and gifs, comics and demotivators), and semiotic units (verbal, audial, visual and mixed messages).

Internet memes in a virtual space acquire a serious potential for influencing the formation of public opinion. Therefore, there should be development of algorithms (with access to creating a software product) with automated monitoring of the processes of origin, structure and depth of its distribution.

2. Problem Statement

There are many studies conducted on this topic (Krongauz, 2012; Kvyat, 2013; Lysenko, 2017: Savitskaya, 2013; Schurina, 2013; Stolyarov, 2014) considering Internet memes as a phenomenon of modern virtual communication and foreign researchers (Aunge, 2002; Blackmore, 2000; González-Bailón, 2017; Lissack, 2004; Pech, 2003). However, it should be noted that in their approaches a lot of empirical generalization and insufficient rigor of scientific analysis, theoretical understanding. In particular, there is not even a more or less specific definition of the concept of Internet meme. Accordingly, research of the topic becomes difficult, which in itself is a research problem, given the significant potential of Internet meme to deconstruct and deform social norms.

Internet memes require appropriate software. This is due to the fact that work with the data flow of Internet memes cannot be carried out manually. There is too much information to be processed and comprehended.

3. Research Questions

The main issues addressed in the framework of the claimed study:

- Operationalization of the concept of Internet meme within intelligent data processing.

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- Description of the empirical basis of the study.
- Database design and filtering procedure for relevant Internet memes of Russian net.
- Semantic and semiotic analysis of Internet memes, identity criteria for intellectual clustering.
- Filling the database, clustering the array, learning automatic filtering algorithms.
- Mapping the distribution of selected Internet memes.
- Modeling the relationship of data by Internet meme profile, community profile, distribution profile.
- Verification of the predictive accuracy of the model on test samples, model adjustment.

4. Purpose of the Study

Description of the intelligent system algorithm for monitoring Internet memes in the virtual communication of Russian youth.

5. Research Methods

The study requires systemic and sociological approaches. A systematic approach will provide a holistic consideration of the static and dynamic characteristics of Internet memes, as a set of interconnected components in the process of functioning and development. A sociological approach will reveal the patterns of influence of Internet memes on Russian-speaking Internet users.

Similarity to the virus, poor structure, fuzzy positioning and life cycle uncertainty distinguishes the Internet meme as an image recognition object, the analysis of which requires the development of Machine Learning methods and algorithms. For the collection and primary processing of Internet meme content, Internet search engines and expert analysis will be used, as well as precedent information on the most frequently and effectively used technologies for using Internet memes. The real problem of classification (recognition) of poorly structured data will be solved using intelligent data processing methods: fuzzy clustering, inference by analogy, neural network method (convolutional, deep), decision tree method, comparative case-law analysis, statistical methods of machine learning. Modeling a virtual environment as a complex network (large graph) will allow the use of tools for calculating the metric characteristics of a complex network and streams of Internet memes in this network.

6. Findings

The intelligent monitoring system of Internet memes is based on the work of the Memometry software product. The set of features of the software product includes:

1. Saving the technical characteristics of the image file: width, height, resolution, aspect ratio, color model, source, creation date, etc.

2. Marking of the image or its individual parts with keywords (tags). Marking should be carried out according to the following:

2.1 the sequence of marking the Internet meme should be carried out from left to right, from top to bottom (if there is no logical exception).

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2.2 for each individual text (word) and graphic (face, hair, hair color, look, clothes, additional accessories, etc.) objects must correspond to one or more keywords (markers, tags).

2.3 each keyword characterizing a textual object must exactly match the word written in image.

2.4 Each keyword characterizing the image should be a simple, not a complex noun.

Right: red, black. Wrong: red-black.

2.5 areas of the image for marking should be distinguished by the boundaries of the object to be described.

3. The formation of primary database of Internet memes is the preservation of images, their technical characteristics and keywords.

4. Creating simple (applying Boolean logic operations to two sets) and complex (using complex Boolean algebra expressions to a large number of sets) expert queries to the primary database of Internet memes.

Google search engine would probably use it, since this search engine refers to the most complete database of images for a number of objective characteristics, and the logic for generating queries is simple from the standpoint of formalizing them.

7. Conclusion

The development and implementation of an intelligent monitoring system of Internet memes in the virtual communication of Russian youth should be considered as one of the tools to counter sociocultural threats, terrorism and ideological extremism.

References

Aunge, R. (2002). *The Electric Meme: A New Theory of How We Think.* Free Press.

Blackmore, S. (2000). Do memes make sense? Yes http://www.susanblackmore.co.uk/Articles/Free%20Inq%202000.htm

Brodie, R. (2009). *Virus of the mind: The new science of the meme.* Hay House, Inc.

Dawkins, R. (1976). *The Selfish Gene.* Oxford University Press.

González-Bailón, S. (2017). *Decoding the Social World: Data Science and the Unintended Consequences of Communication.* MIT Press.

Krongauz, M. A. (2012). Memes on the Internet: the experience of deconstruction. *Memy v internete: opyt dekonstruktsii [Topics on the Internet: Deconstruction Experience]*, 127-131. https://www.nkj.ru

Kvyat, A. G. (2013). Mediam as an instrument of political PR: a cognitive approach. http://www.mediascope.ru

Lissack, M. R. (2003). The redefinition of memes: Ascribing meaning to an empty cliché. *Emergence, 5*(3), 48-65. https://doi.org/10.1207/s15327000em0503_6

Lysenko, E. N. (2017). Internet memes in youth communication. *Bulletin of St. Petersburg State University Sociology*, *10*(4), 410–424.

Pech, R. J. (2003). Memes and cognitive hardwiring: Why are some memes more successful than others? *European Journal of Innovation Management, 6*(3), 173–181. https://doi.org/10.1108/14601060310486244

Rushkoff, D. (2003). *Media virus. How pop culture secretly affects our minds*. Ultra culture.

Savitskaya, T. E. (2013). Internet memes as a phenomenon of mass culture. http://infoculture.rsl.ru/donArch/home/KVM_archive/articles/2013/03/2013-03_r_kvm-s3.pdf

Schurina, Y. V. (2013). Internet memes as a means of intercultural communication. *Bulletin of the Volgograd State Pedag. University, 6*(81), 34–39.

Stolyarov, A. A. (2014). Political memes of the Facebook Revolution era as a way of constructing media reality.

Stolyarov, A. A. (2014). Political Memes of the" Facebook Revolution" Era as a Way of Media Reality Design. *Медиаскоп, 3,* 3-3. http: //www.mediascope.ru/node/1590#13