

# Social Network as a Platform for Growing Opinions and a Method for Its Analysis

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**Abstract**—The article contemplates the possibility of contextual analysis usage for the means of a social network phenomenon research which is the platform for opinion growth and aimed public opinion makeover. The purpose of this work was to examine based on modern information technologies research possibility of communities' socio-psychological focus together with social processes of their origin. There were identified main trends of modern sociological science which are connected with the search of global identity and future civilization development forecast based on multidimensional models created from narratives - views of various target groups of respondents. Below there are given testing results of the search system for communities with the designated psychological focus. The search system is based on doc2vec technology. Developed application being in the process of communities' analysis potentially has the possibility to process visual information. In addition, this application possibly could use network analysis for the user's circle of contacts definition, among other things for the purposes of search for people who provoke teenagers for suicidal acts. In addition to the network analysis of the user's communication circle and the latent-semantic analysis of user's communities' texts it is possible to analyse user's feedback to community publications.

**Keywords**—social networks; contextual analysis; narrative; discussion area; community management; doc2vec technology; public opinion leaders

## I. INTRODUCTION

The analogue world assigns its rights to the digital world. Digital sociology becomes a present-day reality which supposes not only the use of modern tools of online surveys and special applications but also stages that become a platform for social problems discussion and public opinion growth. Information technologies, used earlier to take on marketing tasks, become the most important tool for collecting new ideas of respondents from different target groups and forming images of the present, past and future on their basis. The process of information flows management becomes easier [1]. In order to solve the vital problems of finding the global identity, common values and research the dynamics of social processes and changes.

Modern systems for big data processing are also able to find patterns in behaviour and human activities. With basis of these patterns such system could form forecasts and predict human actions with a high level of accuracy. Such indexes as tolerance, protest moods, the behaviour of the voter or a potential buyer could be predicted. With the help of neuroprogramming, including neuro-linguistic programming, it becomes possible to create people's images of political figures, the country's position in the world, the level of economic development, etc. [2].

Consequently, the technological possibility to create narratives appeared at present time, - i.e. descriptions of social reality according to the request of representatives of this or that elite group. Also there is the possibility to visualize these narratives and control the mass consciousness of the population using mass media, including the Internet [3].

## II. PROBLEM ACTUALITY

The modern communications network supposes not only interpersonal communication in the network or extensive communication with the community but also a complicated system of interconnections within the community and between communities. Somewhat, this communication is a closed one, as it is carried out only at the moment of being on-line and only by users of the network or site and in some cases only by representatives of the community itself. In addition, communication in the network can be anonymous in case the user acts with the nick-name and that allows him to play a self-comfortable role (for example, the Makesense platform "space without moderator"). In this connection, communication in the social network community has the possibility for their ideas growth and development in a coterie, as well as to manage the community inside and outside and that gives the opportunity to create and modify virtual public opinion within the community. For example, the Croud POF long-term platform (Public Opinion Foundation) includes a public opinion platform and a discussion platform. The moderator uses the Yandex-metric and Google-analytics for the analysis of the socio-psychological situation within the community, while

monitoring of the mental motivation of the community members.

In the format of a discussion platform, narratives containing irrational ideas, and even socially and personally destructive, can be advanced. Moreover, in case there is an in-community resource as trust, such narratives could potentially contain a real social and personal threat [4] [5]. It should be noted that not only the availability of certain information about the user can be the basis of his socio-psychological portrait but also the absence of certain fields, characteristics allows obtaining useful information about community members.

### III. SOFTWARE FUNCTION PRINCIPLE

The developed software used to be communities search engine with a given focus on the basis of doc2vec technology, which is an improved version of word2vec, developed by Google in 2013 anno. Word2vec allows one to get a vector representation of the word based on context, i.e. words found in the text next to the same words and, therefore, having a similar meaning, in the vector representation will have close coordinates of the word vectors [6] [7].

The doc2vec technology has an undeniable advantage, as it allows one to solve social and psychological problems relevantly by obtaining vectors of whole texts rather than individual words.

Here is below the way how the system works in the format of the application:

- Using the doc2vec technology the further researched database of latent semantic vectors of communities is formed.
- The text with a strongly desired trend is created.
- Using the technology doc2vec software creates a latent semantic vector of the above text.
- The database search indicates communities which are the nearest to the vector of the given text.
- The communities are given in the away order from the vector of specified text [8].

There is a possibility for the developed application to use services to obtain textual information regarding visual content which will allow the application to consider visual information in the analysis process.

Furthermore, this application can use network analysis of social web for the definition of a friends' circle (and, therefore, a circle of contacts) of users. Such analysis was used, amongst other things, to search for people who provoke teenagers to commit suicidal acts [9]. In addition to the network analysis of the user's communication circle and the latent-semantic analysis of the texts of user's communities, it is possible to analyze user responses to community publications, for example, "like" marks and user comments.

### IV. EXAMPLES OF RESULTS

Let's take as an example a simple community search with a given context. About 500 communities of the social network vk.com were classified before the research.

The given text: "Assembly language is a machine-oriented low-level language with commands that do not always correspond with machine commands, which can provide additional capabilities like macro commands; auto-code extended by high-level programming language constructs such as expressions, macros, utilities which could provide with modularity of programs".

Result:

- "Programmer's Library." Proximity: 0.651423, users: 215273, URL: <https://vk.com/club54530371>. Description: "Subscribe to the channel of the Programmer's Library not to miss the release of interesting publications!"
- "Neuronus.com - Artificial Intelligence Portal". Proximity: 0.647819, users: 550, URL: <https://vk.com/club72864244>. Description: "Portal of knowledge about artificial intelligence. Our community presents the theoretical foundations of mathematical methods and models of artificial intelligence systems. Articles about artificial intelligence, reviews about devices with artificial intelligence, news about artificial intelligence in Russia and all over the world. On our website neuronus.com you can find more detailed information in the sections: artificial neural networks, fuzzy logic, cellular automata, robotics, hybrid models, genetic algorithms."
- "Habrahabr". Proximity: 0.612229, users: 688765, URL: <https://vk.com/club20629724>. Description: "Habrahabr was founded in 2006. The project publisher is Themed Media. The project audience is progressively thinking people who are interested about the future of the IT market in general and about the Internet economy in particular. Habrahabr will interesting both for programmers and journalists, advertisers and layout designers, analysts and copywriters, top and middle managers, owners of large and small companies, as well as for all those for whom IT is not just two letters of the alphabet."
- "High Technologies". Proximity: 0.608482, Users: 794658, URL: <https://vk.com/club34300760>. Description: "High Tech is already everywhere. All the latest news from the world of hi-tech, science and technology. The future is not far off; the future is beyond the clouds - this is our mantra."
- "The world of science and technology!" Proximity: 0.590190, users: 449189, URL: <https://vk.com/club61796404>. Description: "Know the world around us!" [10].

It is clear from the obtained results, that first three communities correspond with the subject of a text given -

topics of information technology, programming. The following two texts correspond with a more general topic - modern science. Thus, we can conclude that the method used is suitable for contextual search for communities in social networks.

We will take for another example the text search according to a given psychological characteristic. As the desired characteristics we will take narcissism.

Narcissism is a character trait that lies in excessive self-love and high self-estimation, which in most cases is not true.

As an input text, we use the quotations from Madonna (47 statements were analysed in total), among which we single out for example the following:

"I will tell you this: everyone has every right to share my opinion."

"If I do something, and ninety-nine people out of a hundred say they like it, then only one remains in my memory who does not like it."

"I am my own experiment, and my own masterpiece."

"I will not be happy until I become equal in popularity with god."

Result:

- "Everything is complicated." Proximity: 0.752584, users: 16312, link: <https://vk.com/club152630249>. Description: "Public for those who have all things difficult. In a relationship, with parents, with study, with myself. Here we discuss everything that is not customary to talk about. Relationships, sex, body, self-acceptance, mental health, various taboos, all sorts of shameful and difficult topics. Subscribe! Throw in the "proposal" stories or topics that you would like to discuss. We will understand together. Stories could be read by tag #igoteverythingdifficult, we are here to support each other. "
- "Wisdom from Dmitry Nagiyev." Proximity: 0.740820, Users: 1690, Link: <https://vk.com/club118449196>. Description: "".
- "Your Territory. Help teens online. Proximity: 0.701272, users: 56595, link: <https://vk.com/club60774666>. Description: "We are psychological help online for those under 23 years old. IF YOU NEED HELP, YOU CAN:

- Write to us in the chat on our website.

- Write a letter to our email [tvoya\\_territoria@mail.ru](mailto:tvoya_territoria@mail.ru)

WE WORK from 15.00 to 22.00 Moscow time."

- "Dana Sokolova". Proximity: 0.692072, users: 32784, link: <https://vk.com/club111545074>. Description: "DANA SOKOLOVA Group Guitar - Ivan Zelenkov Bass Guitar - Pavel Spiders Keyboard - Mikhail Korsakov Drums - Artur Ovcharov".

It is shown in this example that the resulting communities are divided into 2 groups:

- Community of celebrities.
- Psychological assistance to teenagers.

Narcissism, indeed, often could be found out with teenagers and at this age it is recognized by specialists as acceptable one to a certain extent and, as a rule, it smoothens out as they grow older. The results of researches conducted in 2006 by American scientists also show us that celebrities are, first of all, narcissists [11] [12].

## V. CONCLUSION

While research the dynamics of social processes and changes, the socio-psychological profiles of network communities indicate that in any community of a social network there is a formal leader — the administrator of the community; there may also be informal leaders — leaders of public opinion [13]. The "external moderator" can simultaneously be both a formal and informal leader, for example, acting from several accounts, one of them is registered as an administrator and the rest represent themselves as "oppositionists". This allows "external moderator" to form public opinion within the community. Also, one who acts from several accounts could create public pressure (criticism) by creating powerful status of an "expert". For example, using the appropriate nickname or content on the personal page, one could use this status in the process of communication (the format of participation in the discussion with influence). The discussion forum allows creating irrational ideas, narratives and to form the most important resource of influence - trusting [14].

In this regard, the proposed application is the first step in the development of methods for creating personal profiles of communities, their participants, moderators, etc. This will make it possible to mark communities with a specific, predetermined orientation and those who form this orientation for the prevention of socially dangerous acts.

## REFERENCES

- [1] V.Yu. Ivlev, M.L. Ivleva and V.P. Sedyakin, "Information Metaphors and Classification of Information Sciences", Proceedings of the International Conference on Contemporary Education, Social Sciences and Ecological Studies (CESSES 2018). Series "Advances in Social Science, Education and Humanities Research", vol. 283, pp. 874-879, 2018. DOI: 10.2991/cesses-18.2018.193
- [2] V.G. Pisarevskiy, "Auditriya social'nyh setej i internet-soobshchestva kak novye napravleniya «cifrovoy sociologii»", Fundamental'nye i prikladnye issledovaniya: problemy i rezul'taty, no. 6, pp. 96-98, 2013. (V.G. Pisarevskiy, "The Audience of social networks and the internet community as new ways of Digital Sociology // The VI International Scientific and Practical Conference "Fundamental and Applied Research: Problems and Results". Novosibirsk, 2013, p. 96-98).
- [3] N.N. Gubanov and N.I. Gubanov, "Mental Responses to Risks in Modern Society", Proceedings of the International Conference on Contemporary Education, Social Sciences and Ecological Studies (CESSES 2018). Series "Advances in Social Science, Education and Humanities Research", vol. 283, pp. 1003-1007, 2018. DOI: 10.2991/cesses-18.2018.220

- [4] A.V. Chizhik, "Setevye kommunikacii i massovaya kul'tura: vopros vliyaniya novyh mediaformatov na formirovanie obshchestvennogo mneniya", *Kommunikologiya*, vol. 5, no. 3, pp. 55-69, 2017. (A.V. Chizhik, "Network communications and mass culture: the issue of the influence of new media on the formation of public opinion", *Communicology: the electronic scientific journal*, vol. 5, no. 3, pp. 55-69, 2017).
- [5] L.A. Bitkov, "Divnyj novyj mir social'nyh setej, ili kak publichnye stranicy ubivayut grazhdanskuyu zhurnalistiku i rozhdayut nishevye soobshchestva", *Vestnik CHelyabinskogo gosudarstvennogo universiteta*, no. 20 (311), pp. 22-24, 2013. (L.A. Bitkov, "Brave new world of social networking, or why public pages killed citizen journalism and develop special communities", *Bulletin of Chelyabinsk State University*, no. 20 (311), pp. 22-24, 2013).
- [6] S.V. Levchenko, A.M. Kirillov, L.R. Gimashev, "Razrabotka metoda klasterizacii slov po smyslovym karakteristikam s ispol'zovaniem algoritmov word2vec", *Sb.tezisev XXVI mezhdunarodnoj nauchno-prakticheskoy konferencii studentov, aspirantov i molodyh uchenyh (Moskva 10-14 aprelya)*, pp. 106-108, 2017. (S.V. Levchenko, A.M. Kirillov, L.R. Gimashev, "A method of clustering words development according to semantic characteristics using word2vec algorithms", *Theses glossary of the XXVI international scientific-practical conference of students, graduate students and young scientists (Moscow April 10-14)*, pp. 106-108, 2017).
- [7] V.E. Vershinin, Yu.S. Belov, "Modeli vektornogo predstavleniya slov dlya resheniya zadach obrabotki estestvennogo yazyka", *Sb.statej Mezhdunarodnoj nauchno-prakticheskoy konferencii «Nauchnye issledovaniya v oblasti tekhnicheskikh i tekhnologicheskikh sistem» (Ufa)*, pp. 50-54, 2018. (V.E. Vershinin, Yu.S. Belov, "Models of the words' vector representation of for solving natural language processing problems", *Articles Glossary of the International Scientific and Practical Conference "Scientific Research in Technical and Technological Systems" (Ufa)*, pp. 50-54, 2018).
- [8] A.N. Mishenin, E.A. Nefedova, "Analiz tonal'nosti tekstov s ispol'zovaniem tekhnologii word2vec", *Estestvennye i matematicheskie nauki v sovremennom mire*, no. 7 (42), pp. 89-97, 2016. (A.N. Mishenin, E.A. Nefedova "Analysis of the texts tonality using WORD2VEC technology" *Natural and Mathematical Sciences in the Modern World*, no. 7 (42), pp. 89-97, 2016).
- [9] N.I. Gubanov and N.N. Gubanov, "Criminal behavior: biological, social and personal conditionality", *Vestnik slavianskikh kultur – bulletin of slavic cultures-scientific and informational journal*, vol. 48, no. 2, pp. 53-66, 2018.
- [10] S.A. Tonoyan, A.V. Baldin, A.A. Kasikin., G.I. Afanas'ev, "Primenenie instrumentov kontekstnogo analiza dlya issledovaniya psihologicheskikh napravlenostej soobshchestv v social'nyh setyah", *Nauchno-prakticheskij ehlektronnyj zhurnal «Alleya nauki»*, vol. 6, no. 5(21), pp. 1124-1129, 2018. (S.A. Tonoyan, A.V. Baldin, A.A. Kasikin., G.I. Afanasyev, "The use of contextual analysis tools for the research of the psychological orientation of communities in social networks," *Scientific and practical electronic journal "Alley of Science"*, vol. 6, no. 5 (21), pp. 1124-1129, 2018).
- [11] E.A. Golubeva, "Sovremennye podrozkovye soobshchestva v social'nyh setyah kak faktor ehskalacii nacionalizma i ehkstremizma: chto delat' social'nomu pedagogu? ", *Cb. materialov mezhdunarodnoj nauchno-prakticheskoy konferencii, posvyashchennoj 90-letiyu so dnya rozhdeniya akademika G. N. Volkova. CHuvashskij gosudarstvennyj pedagogicheskij universitet im. I.YA.Yakovleva (CHEboksary, 22-24 iyunya)*, pp. 70-75, 2017. (E.A. Golubeva, "Modern teen communities in social networks as a factor of nationalism and extremism escalation: what should a social teacher do?", *Materials glossary of the international scientific-practical conference dedicated to the 90th anniversary of the birth of academician G. N. Volkov. Chuvash State Pedagogical University. I.Ya.Yakovleva (Cheboksary, June 22-24)*, pp. 70-75, 2017).
- [12] Robin Abcarian, «Los Angeles Times». Press digest 22.03.19. <https://www.inopressa.ru/article/12sep2006/latimes/fans.html>.
- [13] N.N. Gubanov and N.I. Gubanov, "Mental Bases of Social Solidarity", *Proceedings of the International Conference on Contemporary Education, Social Sciences and Ecological Studies (CESSSES 2018). Series "Advances in Social Science, Education and Humanities Research"*, vol. 283, pp. 998-1002, 2018. DOI: 10.2991/cesses-18.2018.219
- [14] V. A. Inozemtsev, M.L. Ivleva, V. Yu. Ivlev, "Artificial intelligence and problem of computer representation of knowledge", *Proceedings of the 2017 2nd International Conference on Contemporary Education, Social Sciences and Humanities (ICCESSH 2017). Series "Advances in Social Science, Education and Humanities Research"*, vol. 124, pp.1151-1157, 2017. DOI: 10.2991/iccessh-17.2017.268