Social Networks Communication Infrastructure: the Challenges of Multiculturalism

Artur Gudmanian 1 [0000-0002-5234-1726], Liubov Drotianko 1 [0000-0001-7041-5787], Oksana Shostak 1 [0000-0001-7532-4294], Serhii Yahodzinskyi 1 [0000-0001-8755-2235] and Tamara Radivilova 2 [0000-0001-5975-0269]

¹National Aviation University, Kyiv, Ukraine

²Kharkiv National University of Radio Electronics, Kharkiv, Ukraine
guman@nau.edu.ua

Abstract. The introduction states that the Internet creation leads to the unification of social networks' communication norms and rules, as well as to the development of an artificial language of communication. They facilitate the communication of different nations' representatives in the globalization and multiculturalism context. The purpose of the article is to identify the mutual influence of communication processes in social information networks and the multiculturalism phenomenon. The socio-cultural approach methodology was used to study the social information networks communication peculiarities within the context of cultural transformations. The linguistic means of communication of cultural content were investigated through the method of cultural-semantic analysis. The results substantiate that the language of communication in various Internet spheres social networks differ both in form and in content. However, the information and communication technologies language uses common characteristics such as emoticons, emoticons, which affect emotions and feelings. Different information networks keep the same meaning for those characteristics, which makes them understandable for all users alike. The problems of social networks communication in the conditions of multiculturalism are also revealed. They relate to the existence of not one, but several variants of English language (American, Indian, Australian, etc.). The conclusions indicate that the use of computer information technologies lead to the Internet communications specific language formation.

Keywords: Information and Communication Technologies, Social Networks, Internet, Social Communications, Language of Communication, Multiculturalism, Globalization.

Introduction

The last decades of the twentieth century indicates rapid changes in public life under the direct influence of the information revolution. These processes influence practically all countries – widespread introduction of modern information technology has enhanced economic transformation on a planetary scale, launched the rise of material and spiritual culture phenomena which led to civilizational transformations.

Copyright © 2020 for this paper by its authors. Use permitted under Creative Commons License Attribution 4.0 International (CC BY 4.0) CMiGIN-2019: International Workshop on Conflict Management in Global Information Networks

Never before the technology role had elevation touched so deep social and personal existence foundations. Modern microelectronic technology is in the process of modification (and has already changed) the nature of social work, it has transformed social structure and made adjustments to the decision-making system at different levels of public life organization.

Equally, these transformations have affected communication processes in all social fields, the most significant role in these transformations belongs to the World Wide Web, which draws together an increasing number of inhabitants of the globe, which leads to a certain unification of social networks communication rules as well as the development of artificial language for communication, emergence of special symbols, images, signs to facilitate communication among different nations' representatives. The vehicle network expansion is contributed to the information and communication technologies development as well as to human movement from home in work search, study abroad and just for travel. These processes introduce the multiculturalism phenomenon over the whole planet.

Increased attention to national identity, the need for the consolidation of ethnic communities, the attempt to create a national ideal and national idea in the new social conditions, along with the desire to isolate from mass national mythology, culture, history and customs — all this components are a protective reaction to the increased unification of spiritual and material culture in the conditions of the 20th-21st century globalization. The topic of ethnic disagreement is perhaps the most painful and obviously very 'uncomfortable' issue in any modern society, so they try not to 'notice' it or at least not speak it out loud in a 'decent society'. Until recently, this was the theme of the Crimean Tatars in Ukraine, and the place of the Ukrainians themselves in the discourse of 'Russian history' belongs to the same number of inconvenient topics. Those who are a little over 35 remember the times when speaking Ukrainian was hardly a manifestation or ignorance, while Russian was the opposite, but it was at the level of household stereotypes, aloud, of course, no one spoke. What such silences lead to, we are all well aware of. The inferiority trauma remains in this generation until now.

The movement toward national identity at the beginning of the 21st century acquired the character of a world trend that affected societies of many countries, regardless of their level of development. The concept of identity originates from the Latin word 'identifico', which means 'I identify'. The concept of the identity of the indigenous peoples of North America is an extremely controversial phenomenon from a philosophical point of view, but it acquires even greater multi-vectority in the political context. In the modern world, the question of which people should be considered an indigenous people, and what are the criteria that outline the national identity, are extremely acute. An important component of the national individual awareness is the ability to create human relations between representatives of different ethnic communities.

We already explored aspect of multiculturalism that addressed multicultural societies communication problems, and noted that the complex problem' in the multicultural environment is the linguistic aspect of intercultural communication, when' Self – Other' principle operates in linguistic communication. This principle is

embodied not only in the negative attitude towards other languages, but also in the generation of offensive words and phrases that characterize representatives of other ethno-national communities' [1, p. 5]. Unfortunately, the last comment also applies to the Internet communication processes, when some users suggest incorrect statements, use signs and images that mean disrespect toward other users.

Particularly unacceptable are statements about the ethnic, national or racial identity. The globalization intensification processes will have a significant impact on intercultural communication in the global information space, so the problem of communication in social networks philosophical understanding as multiculturalism objective phenomenon is in the process of actualization.

The debate around a clear definition of the standards of concept 'Indigenous' versus self-identification adds an even greater urgency to the dilemma of constructing a national identity. Present time is marked by researches in the field of so-called 'anticolonial identity', which are caused by the danger of conflicts of ethno cultural worlds.

Good example of multicultural understanding possible due to Internet technologies might be presented in understand be Native American identity by Ukrainians. Living in present-day Ukraine we definitely know about the importance of being true to the history of the land. But the majority of Ukrainians would answer this question with another question: Do Native Americans still exist? The reason for such situation is enrooted in the colonial past of the territory known as former Soviet Union as well as such countries as the United States of America and Canada. It was quite popular to talk about American genocide of colored people in Soviet Union, which was kind of hidden contraposition to the "national equality" of the "brotherhood of Soviet nations". American Indians cultures were researched as an "extinct by capitalism nation" and never admitted to be existing now. Mainstream American society was well aware about their existence, but preferred not to talk about it as of an inconvenient topic. The comparison might be done to the similar situation with Crimean Tatars' nation in pre-2014 Ukrainian society

Of course, all of us read James Fennimore Cooper's novels and grieved Uncas' death as a symbol of decline of great nation. But is it really so? Mohicans are part of Algonquian nation still exists on the territory of Wisconsin where it was forced by European colonialists. Another classical literary reference to the indigenous people of the US land is found in Mobi Dick. Melville's use of "Pequod" as the name of the ship anticipated the commercialization of Native names for vehicles, such as Jeep Cherokee and Dodge Dakota. Pequod is the name of virtual eliminated indigenous nation, as the result of the Pequot war of 1636-1637 and Treaty of Hartford, the major feature of this treaty was to outlaw the Pequot language and name. Any survivors would be referred in the future as Mohegans or Narragansett, forbidding the Pequot from regrouping as a tribe, and required that other tribes in the region submit all their inter-tribal grievance to the English and abide by their decisions. No Pequot town or settlement would be allowed. It is interesting to mention that Cooper's heroic Uncas was at the Pequot Massacre helping to slaughter them, as Mohegans and Narragansetts joined Masons and Puritans against the Pequots. Gradually the Peaquot were able to reestablish their identity, but as separate tribes in separate communities.

A question might be raised: Is genocide a necessary precursor of branding American vessels and automobiles with the names of Indian nations? It is quite possible that Melville deliberately named Ahab's doomed ship after the persecuted tribe; it was his way of warning to compatriots, his attempt to highlight and to excoriate colonialists' and mid-19th century massacres of Native Americans and oppressions of other native people. This vessel symbol can be read as a state carrying diverse people and it is doomed under unwise leadership: Ahab refuses to end his pursuit of Mobi Dick no matter the cost of human lives including his own. This book might be interpreted as a jeremiad, prevention of the future failure of the country should it be so rigid, hating and self-righteous.

Modern-day American society in a way heeded that request, the end of 60-s was marked by the Native American Renaissance with such prominent Native American writers such as N. Scott Momaday, Leslie Marmon Silko, Louise Erdrich, Paula Gunn Allen, Gerald Vizenor, James Welch, Louis Owens, Linda Hogan, Simon Ortiz, Linda Boyden and many others. Their books are devoted to recovering indigenous identity. These labors are really necessary; they bear fruits to the whole society, they invite their readers into necessary discussion of the role natives played in the shaping of the modern world. Native American literary works illuminate the issues of nationhood, relationship and memory, citizenship and self-determination through particular native landscape, pretty often it is done through an ironic transnational framework. Writers, representatives of different indigenous nations reveal the peculiarities and determine the locales and ideas of nations, despite discourses of dominance that would preordain and reduce Native American experience to an urban/reservation dichotomy and normalize colonial conquest.

Unfortunately, Ukrainian scholars do not pay enough attention to the representatives of these particular US cultures in the context of the critical concepts of transnationalism and globalization. Published in 2002 textbook on the history of 20th century American Lit does not mention native authors at all, while revised addition which appeared ten years later names really briefly only two of them N. Scott Momaday and Leslie Marmon Silko. While the first one is addressed as positively tuned, the second one is attested as a singer of doomed perishing culture, which is very limited interpretation of Silko's writing. It is greatly important for the modern scholars to take one step beyond simple multiculturalism and voluntary affiliate our studies among different communities and cultures; it's time for us to get relied upon broader facts of US ethnical and national history as it may benefit our own culture and nations. Internet technologies made possible for Ukrainians to be aware of Native American problems.

Aim

As noted above, modern world is a place where mutual imposition of problems is caused by the informatization strengthening in all public life spheres; this process is characterized by reinforces changes in the quality and number of communication processes that lead to globalization processes intensification.

It is important to identify the interplay of communication processes in social information networks and the multiculturalism phenomenon in new forms in the globalization framework.

Research methods

The socio-cultural methodological approach will be applied during the research, this will allow to consider the communication processes peculiarities in social information networks occurring in the context of globalization since the end of the twentieth century. An important role will be given to the cultural-semantic analysis method, which will explore changes in the linguistic communication cultural content in the communication process through social information networks by the representatives of different cultures.

Research results

Problems of social communications, communicative acts and communicative actions are permanently relevant for various social sciences and humanities, since the very essence of social being is manifested through language and speech, which are in constant transformation in different culture spheres. The emergence of new technical communication tools has a significant impact on the language and speech transformation, and therefore upon the forms of communication in the society. M. McLuhan has produced a study of technology influence upon the communication processes. In his research' Understanding Media: External Extensions of Human' he wrote that' the medium of communication is connection because it is the medium of communication that defines and controls the human association and action scale and forms' [2, p. 11]. The communications technology development from the very invention of the road and the wheel to the radio, telegraph, television and modern personal computers has expanded human communication boundaries and scope.

We will focus upon the role of information and communication technologies, which are crucial in the Internet creation, in the communication processes transformation within the social information networks in the accelerating globalization context and multiculturalism phenomenon.

M. McLuhan divided all technical means of communication into hot and cold. To the hot ones, he referred as to' characterized by a low degree of audience participation, and cold ones by a higher degree of participation, or the completion of what is lacking' [2, p. 27]. According to this classification, computer networks belong to the cold communication media, since they allow us to' complete' the field of human communication in the global scale. The Internet has really broken the closed communication circles, as they existed within a certain settlement, region, country, such communication also allows to reduce the time for obtaining the necessary information – literally on-line.

The development of information and communication technologies is happening at such a rapid pace that, first, it can significantly reduce the cost of their use, which

helps to attract millions of users worldwide, and secondly, the creation of new social networks, drawing together the people with specific interests and education level as well as occupation and age characteristics.

Different user groups use their own language arsenal, whether in the form of youth slang, or through the use of certain pictures, images, etc. Communication in information networks is characterized primarily by the fact that they occur in text form. From this stand point text messages are broadcasted from one member of the relevant social media network to another. As S. Gusev rightly writes,' in essence, public communication emerges as a constant creation and exchange of some verbal constructs that can be regarded as the' text' that underlies communication' [3, p. 16]. In the communicative space of the Internet, all messages are textual.

But these texts may contain both natural language words and artificially created linguistic tools used in computer technology. In this context, O. Antipova's remark about' the elements of everyday language form as the the basis of Internet communications, where most genres gravitate to a conversational style, which confirms the desire to convey signs of live broadcasting, its emotionality, polydiscursiveness' [4, p. 136] is justified. However, as we noted above, transformations are subject to words of daily use, replaced by emoticons and brackets.

The availability of various social networks increases the number of communications; there is a global polylogue, which is attended by participants of different social networks, who lives thousands of miles apart from each other. Information and communication technologies' give the culture of the XX-XXI centuries a planetary scale at which successes, problems, and even thinking become global' [5, p. 253].

The newest global phenomenon is multiculturalism. Over the past couple decades, researchers from different countries have come to reflect on different aspects of this phenomenon. Multiculturalism is an objective phenomenon in the context of globalization in all social spheres – economic, socio-political, spiritual.

The accelerated informatization imposes its imprint on the specific manifestation of multiculturalism in different social spheres, but the most prominent feature in our view is the transformation of the language of communication. Of course, the communication in economic, political, religious, aesthetic differs in form and content. However, language based on the use of information and communication technologies in different social practices has common characteristics.

A all spheres of public life computerization has led to the new words, terms and whole linguistic expressions emergence, that more or less adequately represent the new social phenomena which arose through the use of information and communication technologies. They are organically interwoven into the modern communication language in different spheres of life. These processes are also characteristic of communications on social networks.

Moreover, the transformation of the cultural content of words is even more pronounced, since linguistic means of the Internet are connected not only with words of natural language, but also with artificially created signs and intentionally distorted words.

The lack of direct contact between users and the inability to express their emotional state in words leads to the use of interpersonal communication on social networks and a fairly new means of feelings expressions and emotions, such as emoticons, which carry out a schematic representation of human faces in electronic transmissions. Regardless of the social activity type, these artificial language information networks means have the same meaning everywhere and are understood by all users equally.

But social networks intercultural communication creates some language barriers. In particular, the majority of communication processes researchers on social networks of the Internet, recognize the fact that English language is widely used as a common feature of these different ethno-national cultures communications. However, the problems of communication are overlooked, because, as the American researcher of Polish descent A. Vezhbitsky rightly writes, there is a direct relationship between language and how we think [6, p. 21]. It justifies the view that the language of each culture is characterized by so-called' keywords' that represent a particular culture, these are' words that are especially important and indicative of a particular culture' [6, p. 35]. And a representative of this culture may still have a way of thinking that is determined by these keywords. Therefore, we are convinced that there can be no complete understanding between representatives of different cultures on social networks, even if they use English.

Another communicative problem of Internet communication is the presence of more than one English language. Let us turn again to the work of A. Vezhbitskaya' Understanding Cultures through the Mediation of Keywords'. The author writes that there are differences between Australian English, American English, Indian English and other varieties of English existing in the world. The question arises: on what basis do they all merge into one group as' English'? [6, p. 41]. In our opinion, even if native speakers of different English languages use the same words (including social networks), the content of the latter is still different.

Let's look at the usage of the word' friend' in online communication. It is known that the word' friends' on Facebook refers to people who are subscribed to each other. However, there are people who are not personally acquainted with each other and are spatially located at considerable distances from each other. Are you really friends in the Slavic languages sense of the word? Some users, in a difficult life situation, seek the advice of' friends' on Facebook, who give inadequate advice, which leads to tragedies.

The point is that in different cultures, the same sensory and life problems are experienced differently and understood differently, so it is impossible to take into account very specific life situations advice from other cultures, even if people use the same language. The mental aspect of communication processes in a multicultural information space must be taken into account in intercultural communication to understand the meanings.

The development and continuous expansion of the communication boundaries of in social information networks give many benefits to various Internet societies participants. The researchers warn about the existing and possible future threats that such communications entail.

One of the threats is self-isolation of people who spend their time mostly in the Internet space, replacing direct human-to-human communication with virtual communication with virtual interlocutors.

They are unable to go into the real world, face real, not virtual issues in social information, don't know how adequately respond to life's challenges. Such threats are common in practically all countries with more or less advanced Internet networks, where access to Internet communications is quite free.

Discussion

The problems of multiculturalism, intercultural communication, modern communication processes in social information networks were investigated by domestic and foreign researchers. In Huntington's famous work' The Collision of Civilizations,' the problem of intercultural communication in connection with the use of English as an' intercultural medium of communication' has been addressed [7, p. 81]. The author doubted that English would become truly' world language' as it is not native to 92% of the world population. However, in his opinion, people who need to communicate have to look for a common language, which is English (Ibid).

An in-depth study of communication problems in Internet networks was carried out by M. Castells in his work' Internet Galaxy', he highlighted the peculiarities of the Internet culture formation, which' is rooted in the scientific tradition of joint progress in science, the reputation of scientific excellence, peer review and openness to all research findings, with due respect to the authors of each discovery' [7, p. 38]. From the above passage, it is obvious that M. Castels believes that communication in the Internet information networks will be exceptionally benevolent, tolerant, based on the principles of morality.

M. Castels generalizes that the modern structure of information social Internet system networks, he has implemented this classification in connection to the need for identification of the' Internet culture'. He argues that the first social group united by a common purpose in the Internet was a techno-elite which actually made the Internet itself. Later on, a group of hackers was formed, but in the primary sense of the word:' They are not those crazy computer fans who seek to crack codes, illegally hack into systems or create chaos in computer traffic.

Those who usually behave in this way are called' crackers' [8, p. 39]. He calls hackers those users who are skilled programmers who share technological innovations in the open information space on the Web. Later, according to Castells, other groups of users are formed on the Internet, which he calls virtual communities, which also share common interests. And with the development of information and communication technologies, they are actively used by entrepreneurs for making profits through the Internet. The researcher calls their culture' a culture of money.'

The above four levels that make up the Internet community constitute, in his conception, the culture of the Internet, at the pinnacle of which he regards the techno meritocratic culture of the scientific and technological elite [8, p. 53-58]. While the

Internet has been spread to all corners of the globe, it has prompted its users to create other social networks for particular interests.

F. Fukuyama considers the influence of information and communication technologies on the human future in his work' Our post human future'. He points out that the operation of personal computers and the Internet in the future will help to prosper, disseminate access to information in a more democratic way and unite users [9, p. 256]. He believes that the proliferation of IT will be a barrier for those who wish to take control over these technologies, whether at the national or international level

D. Ivanov argues that the increasing number of human communications since the end of the twentieth century is related to the Internet functioning. He rightly considers that accelerated information condition becomes real idol for the humankind because it' serves as justification of actions. That is why it is so necessary for modern people, valuable to them, influences them' [10, p. 360]. In this context the researcher looks upon the information itself:' Information is communication, the translation of symbols that provokes action. If one defines information this way, it becomes clear why the main computer revolution phenomenon was Internet, not giant electronic data banks or artificial intelligence' [10, p. 361]. This electronic network has spread across the globe and contains the largest number of communications.

B. Liach analyzes the Internet functioning problem from the point of view of self-realization human freedom within information and communication processes. The researcher concludes that information society resulted into the self-realization problem as a specific task in the new type of society creating process, it will require human ability to produce new ideas, quickly adapt to changing circumstances, developed imagination, intuition, be communicative [11, p. 81].

Modern world distribution of information and communication technologies L. Orokhovska connects with transformation of mass media and media culture, she believes that media culture is capable of helping to overcome multiculturalism's negative aspects. According to the researcher,' tolerance in a multicultural society should be a mandatory communicative norm of media discourse. Mass media should take into consideration the peculiarities of linguistic behavior, rules of communication, customs and rituals of a particular region or society' [12, p. 53]. Unfortunately, average users of the Network, either of communicative ignorance of the respective local culture, or due to unwillingness to pay attention to such things, use linguistic means that cause moral damage to the communication processes.

Social networks are linguistic structures in which household language, complemented by the symbolism of images, audio and video materials, become universal communication medium. The social network itself becomes a social institution. Such institution represents itself as a player of communicative action. Its content expresses moods, aspirations, interests, connections in social space and time.

V. Onoprienko draws attention to the negative tendencies generated by Network information and communication technologies. He analyzes the growing economic gap between the rich and the poor, which has significantly different access to the use of new information technologies, in his opinion, it creates a new type of poverty –' information poverty' [13, p. 21].

The researcher rightly points out that' as the technology-based society development increases the risk for many people to be excluded from social life framework. First of all, these would be low-income citizens who simply cannot afford to get quality education, acquire new digital equipment and work in computer networks' [13, p. 22]. These citizens find themselves removed from modern social information networks. It might be observed in different corners of the planet as one more sign of globalization; therefore,' digital poverty' is a global phenomenon [14-18].

Conclusions

The multiculturalism phenomenon, as an objective process of interaction between different nations and cultures, characterizes the world community since the decades of the twentieth century; it has changed communication between people forever. It has changed the means of communication:

- 1) the development of aviation, railways and highways on a global scale, intensified migration processes in the world and caused a need to develop unified linguistic means for intercultural communication;
- 2) information and communication technologies creation and development are based on the use of artificial machine language, it leads to the formation of Internet communications specific language, which allows the users of the Network which belong to different nations and ethnicities to understand each other with appropriate words, signs, symbols, schemes.

In the processes of such intercultural communication, people influence the consciousness and behavior of each other; learn to understand the internal emotional state of other cultures representatives, to develop common ideas, interests, aspirations, etc.

Such processes are intrinsic for all local social networks. However, each of them has specific features related to the age, gender, ethno-national and other characteristics of the participants in these networks. Information networks produce specific language words, linguistic expressions, signs for communication and understanding amidst particular social network users. There is a standardization of communication actions that requires compliances with the rules and regulations in the construction of Internet messages, ensuring successful communication within the relevant social network.

References

- Drotianko, L.H., Zholdokov, V.O. Multykulturalizm komunikatyvnykh protsesiv u hlobalizovanomu sviti. Visnyk Natsionalnoho aviatsiinoho universytetu. Seriia: Filosofiia. Kulturolohiia: Zbirnyk naukovykh prats. Vyp. 1 (15), pp. 5-8. NAU, Kyiv (2012).
- Maklyuen, M. Ponimanie media: Vneshnie rasshireniya cheloveka. Giperboreya, Moskva (2007).
- Gusev, S.S. Metafizika teksta. Kommunikativnaya logika Gumanitarnaya Akademiya, Sankt Peterburg (2008).

- 4. Antipova, O.P. Sotsiokulturnyi prostir informatsiinoi ery: vzaiemovplyv pryrodnoi ta shtuchnoi mov. Dnipropetrovskyi universytet vnutrishnikh sprav, Dnipropetrovsk (2013).
- 5. Artamonova, Yu.D. Tekst SMI v sovremennoy kulture: opyit filosofskogo analiza. Yazyik sredstv massovoy informatsii, pp. 248-263. Akademicheskiy Proekt, Moskva (2008).
- Vezhbitskaya, A. Ponimanie kultur cherez posredstvo klyuchevyih slov. Yazyik slavyanskoy kulturyi, Moskva (2001).
- 7. Hantington, S. Stolknovenie tsivilizatsiy. AST, Moskva (2007).
- 8. Kastels, M. Internet-halaktyka. Mirkuvannia shchodo Internetu, biznesu i suspilstva. Vakler, Kyiv (2007).
- 9. Fukuyama, F. Nashe postchelovecheskoe buduschee. AST, Moskva (2009).
- Ivanov, D. Obschestvo kak virtualnaya realnost. Informatsionnoe obschestvo, rr. 355-427.
 AST, Moskva (2004).
- 11. Liakh, V.V. Suchasne informatsiine suspilstvo: novi vymiry liudskoho isnuvannia. Informatsiine suspilstvo u sotsialno-filosofskii retrospektyvi ta perspektyvi, pp. 46-111. KhKhI stolittia: dialoh kultur, Kyiv (2009).
- 12. Orokhovska, L.A. Mediakultura yak faktor bezpeky rozvytku multykulturnoho suspilstva. Visnyk Natsionalnoho aviatsiinoho universytetu. Seriia: Filosofiia. Kulturolohiia: Zbirnyk naukovykh prats. Vyp. 2 (15), pp. 49-53. NAU, Kyiv (2015).
- 13. Onoprienko, V.I. Ponyatie 'informatsionnaya bednost' v kontekste globalizatsii. VIsnik NatsIonalnogo avIatsIynogo unIversitetu. Seriya: filosofiya. Kulturologiya: Zbirnik naukovih prats. Vip. 1 (13), pp. 19-22. NAU, KiYiv (2011).
- 14. Fedushko S., Trach O., Kunch Z., Turchyn Y., Yarka U. Modelling the Behavior Classification of Social News Aggregations Users. CEUR Workshop Proceedings. 2019. Vol 2392: Proceedings of the 1st International Workshop on Control, Optimisation and Analytical Processing of Social Networks (COAPSN-2019). p. 95–110. http://ceurws.org/Vol-2392/paper8.pdf
- 15. Fedushko S., Ustyianovych T. (2020) Predicting Pupil's Successfulness Factors Using Machine Learning Algorithms and Mathematical Modelling Methods. In: Hu Z., Petoukhov S., Dychka I., He M. (eds) Advances in Computer Science for Engineering and Education II. ICCSEEA 2019. Advances in Intelligent Systems and Computing, vol 938. Springer, Cham. pp 625-636. DOI 10.1007/978-3-030-16621-2_58
- 16. Korobiichuk I., Syerov Y., Fedushko S. (2020) The Method of Semantic Structuring of Virtual Community Content. In: Szewczyk R., Krejsa J., Nowicki M., Ostaszewska-Liżewska A. (eds) Mechatronics 2019: Recent Advances Towards Industry 4.0. MECHATRONICS 2019. Advances in Intelligent Systems and Computing, vol 1044. Springer, Cham. pp 11-18. https://doi.org/10.1007/978-3-030-29993-4_2
- 17. Melnykova N., Buchyn M., Albota S., Fedushko S., Kashuba S. (2020) The Special Ways for Processing Personalized Data During Voting in Elections. In: Shakhovska N., Medykovskyy M. (eds) Advances in Intelligent Systems and Computing IV. CCSIT 2019. Advances in Intelligent Systems and Computing, vol 1080. Springer, Cham. pp. 781-791. https://doi.org/10.1007/978-3-030-33695-0_52
- 18. Fedushko S., Davidekova M. Analytical service for processing behavioral, psychological and communicative features in the online communication. The International Workshop on Digitalization and Servitization within Factory-Free Economy (D&SwFFE 2019) November 4-7, 2019, Coimbra, Portugal. Procedia Computer Science. Volume 160, 2019, Pages 509-514. https://doi.org/10.1016/j.procs.2019.11.056