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The Problematic Area of Philosophical Discourses on the Application of Artificial Intelligence Systems in Society

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Abstract. The study relevance lies in understanding strategic objectives' content concerning intelligent technologies' application. The development and application of artificial intelligence in various branches of human activity carry the potential for global changes in society, which, in methodological terms, increases the relevance of considering these problems. The study of ethical problems of artificial intelligence in the concept of sustainable development of society is connected with the dynamic development of innovative artificial intelligence (AI) technologies, which are considered a process of becoming a new technosubject in the context of neuroscience development. The article emphasizes that the development of artificial intelligence acts as an innovative form of technology development when a new kind of human-machine technosubject is formed. The authors identify social problems of artificial intelligence application as the digitalization of life becomes a global anthropological challenge. Innovations of artificial intelligence are directly related to a number of ethical problems, as they contribute not only to the sustainable development of society but also cause dehumanization of relations between people and society. Based on the analysis of qualitative changes in scientific and technological research, using human-machine devices is becoming inevitable. Humankind must develop ethical guidelines for the application of AI systems.

Keywords: information epistemology, neuroscience, neural networks, technosubject, innovative technologies, information security, ethics of artificial intelligence

Проблемное поле философских дискурсов о применении систем искусственного интеллекта в социуме

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Аннотация. Актуальность исследования заключается в необходимости понять содержание стратегических задач в отношении применения интеллектуальных технологий. Разработка и применение искусственного интеллекта в различных отраслях деятельности человека несут в себе потенциал глобальных изменений в обществе, что в методологическом плане повышает актуальность рассмотрения этих проблем. Исследование этических проблем искусственного интеллекта в концепции устойчивого развития общества связано с динамичным развитием инновационных технологий искусственного интеллекта (ИИ), которые рассматриваются как процесс становления нового техносубъекта в контексте развития нейронаук. В исследовании подчеркивается, что развитие искусственного интеллекта выступает инновационной формой развития техники, когда формируется новый вид — человека-машинный техносубъект. Авторами выявляются социальные проблемы применения искусственного интеллекта, так как цифровизация жизни становится глобальным антропологическим вызовом. Инновации искусственного интеллекта напрямую связаны с целым рядом этических проблем, так как вносят не только положительных вклад в устойчивое развитие общества, но и являются причиной дегуманизации отношений между людьми и обществом. На основе анализа качественных изменений в сфере научных и технологических исследований можно сделать вывод, что использование человеко-машинных устройств становится неизбежностью, человечество должно выработать этические ориентиры применения систем ИИ.

Ключевые слова: информационная эпистемология, нейронауки, нейронные сети, техносубъект, инновационные технологии, информационная безопасность, этика искусственного интеллекта

Introduction

The relevance of this study is related to the need to identify a set of primary conditions for the use of artificial intelligence (AI) and the consequences of its application in society. Neurosciences and artificial intelligence research have a long, shared history. Advances in the field of neurosciences, along with a severe increase in the performance of computing systems over the past few decades, have led to the emergence of a new generation of neural networks, which was inspired by discoveries in the field of brain research and implemented through the possibilities of computer modeling [1. P. 36]. Most of the 20th-century technologies are model-based, which means that scientists study nature and assume scientific models to describe it, based on which the development of technologies takes place. For instance, understanding the principles of electromagnetic wave propagation is the basis of wireless communication technology. Modeling the human brain, however, is a challenge that is still far from the stage where cognitive machines will be model-based. Therefore, AI is realized based on a different approach — a data-driven approach.

The data-driven approach forms the core of machine learning, which is typically implemented based on artificial neural networks (ANNs). ANNs consist of a series of nodes conceptually similar to brain neurons and connected by links running through several layers. Nodes in the input layer receive information from the external environment, and each such node undergoes a nonlinear transformation of the data. Such systems learn to perform tasks by analyzing examples (labeled data) and usually do not have task-specific rules or models in their programs. Ultimately, deep learning is built on multi-layer ANNs, allowing the machine to recognize complex concepts such as human faces and bodies, understand spoken language, and classify images.

New artificial intelligence systems now possess many of biological systems' advanced perceptual and cognitive capabilities, including object recognition and decision-making functions. A key aspect of AI's ability to demonstrate human-like capabilities is scalability. The effectiveness of AI-based systems depends on the data they acquire, and to maximize effectiveness, access to relevant data must be unrestricted. There may be technical limitations on data access, but how data is selected and classified is also a sociocultural issue [2]. Classification is culturally dependent and developed through historical development, which may lead to biased decisions made by an algorithm. If that system accesses a different data set, the degree of this bias may be reduced, but it cannot be eliminated completely. Thus, in the context of modern technological turbulence and the

decreasing availability of technology, it is necessary to consider various aspects of artificial intelligence implementation to realize the sustainable development of society.

Methodological Aspects of Artificial Intelligence Research

The methods of comparative analysis, system approach, and philosophical reflection are applied in researching the influence of artificial intelligence on the development of the concept of sustainable development of society. Informatics greatly influences many areas of scientific research, transferring its scientific methodology to them. The works of N. Wiener, A. Turing, N. Moiseyev, and T. Chernigovskaya analyze the epistemological problems of artificial intelligence and reveal the role of such cognitive tools as categories, logical structures, previously accumulated technical knowledge, and specific semiotic systems.

Jürgen Habermas, a German philosopher and sociologist, in his work *Moral Consciousness and Communicative Action*, dividing communicative and technical rationality, sees the latter as a danger for individuals and society. Based on communicative reason, a personality emerges in man, capable of transforming society, which necessarily includes a moral and practical constant, which the machine does not have [3].

Sociologist D. Ivanov notes that the 20th-century man perceives the surrounding reality as a natural given in which he exists. However, due to various life situations, it ceases to satisfy him. He does not want to solve the arisen issues independently and finds peace of mind by immersing himself in virtual reality. The prospect that relations between people will take the form of relations between images is the prospect of virtualization of society. As D. Ivanov notes, we live and act in the era of simulations, which leads to the compensation of events missing in reality by simulacra [4. P. 131—134].

Many researchers agree with these conclusions and call it negative when personal life problems are virtualized and when a person is afraid to cope with the difficulties of real life, escaping from them.

Because of this, work in artificial intelligence parallels research in psychology, physiology, and ethics. Unlike the question asked in the 1960s by A. Turing—"Can machines think?"—today, this question sounds different: "Does a person understand well enough to transfer the thinking function to a computer?" [5].

Relevant in methodological terms of building a general theory of business is the problem of defining global corporations, criteria, and the environment of their activities in the economic field of society. Thus, the UN has repeatedly discussed the issue of a code of conduct for multinational corporations. In this regard, in their studies, T. Zsigmond, R. Machov, and E. Korcsmáro concluded that "Due to modern economic trends, ethics nowadays plays a key role in the life of companies. On the one hand, it contributes to production efficiency, but on the other hand, it also brings cybersecurity challenges" [6. P. 171—190].

Thus, there should be no doubt that today and in the near future, the entire global scientific community will be closely following the development of AI as it shapes the image of artificial intelligence, embodying in it all the most advanced developments in this field, as well as, for the most part, create the very culture of AI education for different needs of society. This is the essence of the fourth industrial revolution.

Theoretical Basis for General Ethical Principles for the Application of AI Systems

Technical civilization has a different picture of values and priorities. One of the main priorities of technical civilization is a new type of communication that facilitates the flow of information. This mobilization of the individual's creative capabilities, free from ideological, religious, and social barriers, raises the status of scientific activity and the acquisition of more information for research.

The problem of artificial intelligence technologies in recent years began to be realized as a mobilization resource for society's social or economic development and as a condition for future dynamic development. In the 21st century, we have entered the fourth industrial revolution (Industry 4.0), where one of the main areas of scientific research is the study of artificial intelligence and its impact on various spheres of life in modern society.

The discussion papers form a vector for the continuation of the research despite the numerous and diverse definitions of AI. The large number of AI definitions in the research literature can be reduced to the distinction of two main concepts, one of which is usually characterized as *theoretical* or *scientific* and the other as *pragmatic* or *technological*.

The theoretical, or scientific, approach (N. Wiener, N. Bostrom, D. Haraway, J. Habermas, David J. Gunkel, T. Chernigovskaya, N. Moiseyev, A. Nazaretyan) is carried out, e.g., within the framework of information epistemology, closely related to philosophy, logic, linguistics, psychology, and neurosciences. It is within the theoretical approach that the concept of *strong AI*, that is, genuine intelligence of the same type and level of universality as human intelligence, as opposed to *weak AI*, intelligence that only mimics human intelligence and can perform a limited number of narrowly defined tasks, is formulated. "Although such questions are theoretical or scientific in nature, they involve a number of metaphysical or spiritual issues (including those concerning human uniqueness or free will) that themselves have indirect but nonetheless serious social and ethical implications" [7. P. 60]. Thus, these discussions lead to the conclusion that digitalizing life is a global anthropological challenge. Strong AI is discussed in numerous philosophical works as a potential alternative to human intelligence, an *artificial consciousness* capable of self-learning and self-development, thus posing a real danger in competition with humans.

The pragmatic, or technological, concept of artificial intelligence (A. Turing, T. Zsigmond, G. Simondon, V. Ignatiev, E. Nikitina, Sven Nyholm) is focused on the technical side of the issue. It is related to the engineering development analysis of weak AI. It aims to build on various components of artificial intelligence, such as machine learning, deep learning, computer vision, and robotics, to create machines or programs that can independently perform tasks that usually require human intelligence and participation. Technologies such as machine translation of human languages, voice dialog systems such as Siri, algorithms that can create socially usable content, and social robots are all designed to communicate with users in a human-like manner [8].

At the same time, numerous discussions in the current research literature emphasize that these technological developments are directly related to the questions of what a human being is, and what is his difference on Earth. This understanding will determine what robotic algorithms are embedded in solving social, scientific, and military problems on which the future of humanity depends. One of the characteristics of AI is that it is "alien" to humans in the sense that the way this intelligence works seems strange and mysterious to us. At the heart of this foreignness is unconscious performance. Highly functional AI systems, such as AlphGo or Watson, can show impressive results without knowing what they are doing. For instance, the Watson system answered complex questions so quickly that it was difficult for most people to comprehend them in the allotted time. Still, Watson does not *answer* questions in the human sense of the word. The system *calculates* the probability of correctness of several possible answers based on automated analysis of the available database [9].

With the development of intelligent human-machine systems, the question will arise: who will lay down robotic algorithms and for what purpose? The subjectivism of developers, susceptibility to political conjuncture, and the complexity of the technologies themselves are inevitable, making it necessary to consider these problems through an ethical context.

Value Dimension of Social Consequences of AI Systems Application in Contemporary Society

The ethics of artificial intelligence is part of the ethics of technology characteristic of robotics and the new relationship between evolving new kinds of subjects — biocybernetic and technosubjects with artificial intelligence.

Usually, the ethics of AI is divided into roboethics, which addresses the issues of moral behavior of people in the design and construction of human-machine systems. The second direction is the ethics of artificial intelligence, which addresses the principles of ethical behavior in decision-making by artificial intelligence actors based on certain ethical principles.

Norbert Wiener drew attention to ethical problems that may arise with the development of computer technology in his works *Cybernetics: Or Control and*

Communication in the Animal and the Machine and *Creator and a Robot*. Speaking out against machine worshippers who gave excessive importance to computer technology, he, in his interview with the magazine *U.S. News & World Report* on the question: "Are machines smarter than men?" answered that the advantage of man is in his flexibility, in the ability to work with imprecise ideas and the advantage of machines — in speed and accuracy [10. P. 208]. N. Wiener defended the point of view that it is impossible to rely on computer technology for the sake of fear of making decisions in management activity. This carries the danger of reducing human mental activity. It is also unsafe for the whole society if the machine makes a decision that does not correspond to the ethical attitudes of man.

Gilbert Simondon (1924—1989) was a French philosopher and creator of the original philosophy of technology and the theory of individuation. He became widely known in the late 20th century, although his principal works were written in the second half of the 1950s. G. Simondon was one of the first popularizers of cybernetics in France. In *On the Mode of Existence of Technical Objects*, he justified the genetic laws governing the various stages of technical evolution. He criticized N. Wiener and sought to create a "general phenomenology of machines." Simondon believed that technical objects evolve the same way as living organisms but differently, as there is a human beginning in creating technology. There is a misunderstanding between the user and the technical object when the user has yet to recognize the essence of the technique and its possibilities fully. He emphasized that it is not technology that alienates man, but the man himself, with his utilitarian approach and absurdity of all the benefits of consumption, gives it a negative character [11. P. 98].

Modern researchers J. Habermas, N. Bostrom, D. Haraway, T. Chernigovskaya, and A. Nazaretyan, despite different approaches to ethical assessments of the application of AI, note the importance of the problem in understanding the finding of analogies between artificial intelligence and human thinking, as this analogy can lead to significant social consequences. Innovative technologies such as the creation of "superintelligence" and nanotechnology will be the source of new changes.

The research of neurophysiological mechanisms, as T. Chernigovskaya emphasizes, is interesting for comparing natural and artificial languages. "Programming languages, unlike natural languages, are designed for communication between humans and computers" [12. P .85]. At the same time, it should be noted that this language does not include ethical and moral norms.

In considering several approaches to the ethical evaluation of the application of artificial intelligence, we can distinguish an anthropological approach and a risk-oriented approach.

A.P. Nazaretyan most clearly expresses the anthropological approach in his work *Intelligence in the Universe: History, Formation, Prospects.* The critical approach of the author is that, in his opinion, the outstripping development of intelligence concerning the other two vectors of growth of human civilization —

technological potential and organizational complexity — is a general evolutionary law: "As other global problems are solved, a new one — the relationship between natural and artificial intelligence — will come to the forefront. Furthermore, if humanity grows up to the real emergence of the problem of "dual power of intellects," then confrontational approaches to its solution will be immediately discarded, we can only talk about different variants of their synthesis" [13. P.195].

However, while AI has the potential to change the future of humankind for better and sustainable development, there is a growing awareness of the risks and challenges associated with AI, especially in terms of exacerbating existing inequalities and disparities. Information and communication technologies as an element of the fifth technological mode, have a defining impact on global processes. One of them, of course, is migration. Thus, one of the global migration trends was the mass and uncontrolled arrival of migrants from the Middle East and Africa to Europe in 2014—2016, called the "migration crisis." This process is closely intertwined with technology and innovation.

Thus, it is evident that ethical issues related to the dynamic development of innovative technologies affect individuals and the entire human community as well. In his paper Humans and Robots, Sven Nyholm, Professor at the Ludwig Maximilian University of Munich (LMU München), states that creating new types of information technology will affect the future of human development. Developments in artificial intelligence, allowing the transmission and processing of information in digital form, are not just auxiliary means for solving various applied problems but a change in the cardinal values of culture. Digitalization of life is a global anthropological challenge [14].

The second risk-oriented approach includes transhumanist research. In 1998, the World Transhumanist Association (now — Humanity+) was founded, advocating technologies related to enhancing human intelligence, developing the human body, and improving the quality of life. Much attention was paid to the development of quantum technologies, with the help of which it will be possible to integrate not only technical but also biological systems, which allows strengthening the human brain. The founders of this organization were futurologist philosopher Nick Bostrom and British philosopher David Pearce. N. Bostrom, in his work *Superintelligence: Paths, Dangers, Strategies*, defines superintelligence as intelligence that surpasses the best minds of humankind in all areas, including scientific activity, ingenuity, common sense, and social skills. The concept of *transhuman* speaks to the possibility of transformation of both the individual and his or her consciousness. This gives a qualitatively new meaning to the ontological constants of man himself, the problem of personality, its identification, and values. The problem of defining and establishing the limits of using scientific and technical capabilities of new technologies in this area becomes urgent [15].

Russian philosopher E.A. Nikitina, a specialist in the theory of cognition, notes: "In the everyday and professional information-technological environment of human life, the combination of human thinking and machine computing, human

biological memory and external memory on information carriers, "face-to-face" communication and communication mediated by information technologies, bodily experience in the real-life environment and virtual environment, human and machine vision has become habitual" [16. P. 114].

Studying the interaction between technology and society, sociologist B. Sivirinov poses the question of the ratio of technology and society in the future. Technique, being an element of society in the process of relative autonomization and alienation in the 21st century, acquires a new quality. These innovations are directly related to the problems of ethics, as they produce *the cyborgization* of the new society. Humans and society are functionally connected to cybermechanical systems of automata in production, everyday life, politics, and culture. "Technics — cybernetic devices can have a negative impact, deforming social and interhuman relations. The contradictory nature of this interaction gives rise to two tendencies: *symbiosis* and *cyborgization*" [17. P. 93].

Russian scientist in applied mathematics Moiseyev N.N. emphasizes that robotization of production changes not only the nature of labor but also relations in many social structures. This poses a danger if one fully entrusts the solution of these issues to computer systems. These concerns range from possible criminal acts to the spread of misinformation.

Comprehending the social, intellectual, and cultural implications of the mass adoption of information technologies, especially AI, depends on the quality of training of professionals in various fields of human endeavor [18]. To outline possible scenarios and harness the potential of AI to realize development opportunities while maintaining control over risks, it is vital to develop a more comprehensive understanding of how society is changing under the impact of revolutionary technologies such as AI. Such work must be accompanied by ethical analysis since AI tech, as noted above, is not neutral but is described by intrinsic biases due to the data that are used in their training and the decisions that are made in the training process using that data, and because AI decisions cannot be entirely predictable. Additionally, since AI is a distributed technology that is now managed in practice by multiple actors — institutions, organizations, and companies — a pluralistic, interdisciplinary, multicultural, and multistakeholder approach is needed to analyze the responsible management of AI systems to stimulate discussion about what kind of future for humanity, we are striving for [19]. This analysis needs to address the significant challenges in the development of AI technologies regarding the biases embedded in algorithms, including the risks of creating new forms of exclusion and dehumanization, as well as issues of equitable distribution of benefits and risks, accountability, responsibility, evolution of work, human dignity, safety, and dual-use risks.

Conclusions

This research topic is highly relevant, as the informatization of society and the dynamic development of artificial intelligence technology has the potential for

qualitative changes in society as a whole and the individual separately. As a result of using comparativist methods, the following conclusions are made:

- Artificial intelligence is an innovative technology that requires effective and ethical management by actors.

- Equipping various human activities with computer systems changes the whole structure of cognition.

- An interdisciplinary political, cultural, and multilateral approach is needed to analyze artificial intelligence's ethical and responsible management.

- Innovations of artificial intelligence are directly related to many ethical problems, starting with the elimination of traditional jobs and responsibility for possible physical or psychological damage to humans and ending with the general dehumanization of relations between people and society as a whole, as the digitalization of life becomes a global anthropological challenge.

- There is a need to create a state-national code of ethics for artificial intelligence, which will develop common principles and standards of behavior that can guide actors in their activities.

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