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LEGAL STATUS AND THE ISSUES OF LEGAL PERSONHOOD OF ARTIFICIAL INTELLIGENCE

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ABSTRACT

The purpose of the study is to analyze the leading models of the legal personhood of artificial intelligence, define the legal status of AI, and propose an alternative model of legal personhood for strong AI. The research methodology is based on an analysis of a limited sample of studies selected via special criteria and comprehensively examined. The study also employs methods of analogy and comparative analysis. Results: The key models of the legal personhood of AI are examined and the specifics and features of strong AI are identified. The study concludes that strong AI possesses the following characteristics: the ability to process large amounts of data; autonomy, self-learning ability, and adaptability; and the ability to interact with humans. Given the ongoing development of legal personhood attributed to AI, there is a need to develop a new model of said legal personality that would define AI as a quasi-subject of law – an electronic person with limited rights and duties who is liable for actions that cause or may cause harm to human life and health and pose a threat to society.

Keywords: Artificial intelligence; Rights; Duties; Liability; Algorithm; Program code.

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STATUS LEGAL E AS QUESTÕES DE PERSONALIDADE JURÍDICA DA INTELIGÊNCIA ARTIFICIAL

RESUMO

O objetivo do estudo é analisar os principais modelos de personalidade jurídica da inteligência artificial, definir o status jurídico da IA e propor um modelo alternativo de personalidade jurídica para a IA forte. A metodologia de pesquisa baseia-se na análise de uma amostra limitada de estudos selecionados por meio de critérios especiais e examinados de forma abrangente. O estudo também emprega métodos de analogia e análise comparativa. Resultados: Os principais modelos de personalidade jurídica da IA são examinados e as especificidades e características da IA forte são identificadas. O estudo conclui que a IA robusta possui as seguintes características: a capacidade de processar grandes quantidades de dados; autonomia, capacidade de autoaprendizagem e adaptabilidade; e a capacidade de interagir com seres humanos. Dado o desenvolvimento contínuo da personalidade jurídica atribuída à IA, é necessário desenvolver um novo modelo dessa personalidade jurídica que defina a IA como um quase sujeito de direito - uma pessoa eletrônica com direitos e deveres limitados que é responsável por ações que causam ou podem causar danos à vida e à saúde humanas e representam uma ameaça à sociedade.

Palavras-chave: Inteligência artificial; Direitos; Deveres; Responsabilidade; Algoritmo; Código de programa.

1 INTRODUCTION

The speedy development of the level of artificial intelligence, which is introduced into all spheres of society and interacts with people, is transforming human civilization (Chumaceiro Hernandez et al., 2022; Karimova et al., 2022; Severin, 2023; Vasilev et al., 2022; Ydyrys et al., 2023; Zakharchenko et al., 2018). These changes prompted the UN to adopt a document that outlines the principles of ethical use of AI. However, the rate of development of AI exceeds the promptness of necessary legislative changes, and the issue of the legal status of AI remains particularly acute (Borodina et al., 2023; Pakshin, 2023). Experts debate the prerequisites for the emergence of new approaches to identifying the legal personhood of AI at present (Bikeev et al., 2019; Gurinovich & Lapina, 2022). As technology advances, AI becomes more autonomous and acquires the ability to self-learn. In these circumstances, it is becoming increasingly difficult to attribute the consequences of an AI's actions to its creators (Matvienko et al., 2022). The existing models of the legal personhood of AI fail to take these facts into consideration. Thus, it is necessary to consider the possibility of developing a new model of legal personhood for AI to account for its potential and further evolution (Kirillova et al., 2021).

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2 LITERATURE REVIEW

Experts assert that currently, the issue of liability of AI is approached unequivocally – responsibility for the robot's actions lies with the creator of the AI or third parties involved in the AI's activities (Buyers, 2015). In this case, AI is defined as software unable to act autonomously (Musina, 2023). Yet experts rightly note that as AI continues to develop, it acquires new properties (Dokholyan et al., 2022; Rébé, 2021), so the issue of its legal personhood resurfaces. Among the qualities that can be present in modern AI, which is commonly referred to as strong AI, researchers mention the following:

- ***learning ability*** (Karpenko et al., 2023; Vinichenko et al., 2022);

- ***self-learning ability*** (Likh, 2021);

- ***autonomy***, i.e. the ability to perform a certain task in accordance with the current situation without human intervention (Melnikova & Surov, 2023);

- ***ability to intelligent behavior*** (Wen & Tong, 2023).

With all these characteristics combined, an AI can commit actions not envisioned by its creators, in which case it can spiral out of control and violate the law.

Experts outline certain risks associated with the creation of an AI (Begishev et al., 2020; Gurinovich et al., 2023) and those that arise from its independent activity (Schollaert, 2023). While the first group of risks can be mitigated by perfecting software (Filipova & Koroteev, 2023), risks in the second group require entirely different responses and corrective measures (Mirzagitova et al., 2023; Mullen, 2021).

To address the issues of liability for the actions of AI, scholars propose to distinguish different AI models. Our analysis of selected studies highlights the following AI models:

- AI is perceived as a tool in the hands of a human being and deemed innocent of any offense, the blame being placed on the creator of the AI or third parties involved in its activities. This model is referred to as the ***perpetration-by-another liability model***.

- Presumption of criminal negligence of AI creators in case the AI commits unlawful acts. This model is known as the ***natural-probable-consequence liability model*** (Talimonchik, 2021; Ziemianin, 2021).

- Responsibility for unlawful actions of AI is borne by the operator of AI, the model goes by the name ***quasi-vicarious liability model*** (Bikeev et al., 2019).

- There is a growing body of scholars who propose to assign responsibility to AI and to that end to give it legal personality (Vostriakova, 2023). This model is called the ***model of direct liability of AI*** (Pillai, 2023).

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The prioritization of any of these models will demand obligatory changes in legislative norms and the transformation of legal regulation in the sphere of AI use.

The purpose of the present study is to analyze the leading models of the legal personhood of AI, determine the legal status of AI, and propose an alternative model of legal personhood for strong AI.

3 METHODS

To address the question of whether AI can be held accountable for its actions and to determine the legal status of AI, we selected works by researchers from different countries whose studies we believe to have a lasting impact on research trends in this area. The present study involved desk review and comparative analysis of sources. For a more comprehensive analysis, we examined studies that contained definitions of the legal personhood of AI, the legal status of AI, and the liability of AI.

In our document search, we followed the standards of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (http://www.prisma-statement.org/). PRISMA requires researchers to thoroughly describe and record all stages of search and screening. The PRISMA flowchart has four steps: identifying articles, screening articles, assessing the eligibility of studies, and finalizing the list of studies for inclusion in the systematic review.

Stage 1: Data collection

The research works selected for the study were those concerning the topics of the legal personhood of AI, the legal status of AI, the liability of AI, and AI liability models. A bibliographic search was performed in the Scopus and Web of Science databases, Google Scholar, and official websites publishing international legislation. In total, we collected 266 sources on several topics.

Stage 2. Data screening via sampling criteria.

Studies were selected based on the following criteria:

1. The author(s) have at least three publications on the topic of the legal status of AI in the past 10 years;
2. Over 50% of the author(s)' papers relate to legal topics;
3. The author(s)' profiles state that their publications thematically relate to the legal sciences;
4. The publication date falls between 2003-2023.

With this approach, over 260 publications were initially identified.

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Stage 3. Screening of full texts for eligibility.

Articles whose titles and abstracts were not sufficient to determine the relevance of the topic were read in full. After a thorough assessment, 51 papers were included in the sample.

The PRISMA methodology enabled us to identify the leading models of the legal personhood of AI and propose our concept of it.

4 RESULTS

Experts have established the key characteristics of AI that make it strong AI (Pang, 2022). Only this kind of AI can have a legal personality and a possible liability. Among these characteristics, scholars list autonomy (Melnikova & Surov, 2023), the ability to learn (Karpenko et al., 2023) and self-learn (Likh, 2021), and the ability to act intelligently.

Concurring with these data and conclusions, we note that apart from these features, a strong AI can adapt to new situations, data, and tasks (Rébé, 2021). This gives the AI the ability to develop and become more efficient as it is used (Mullen, 2021). This kind of AI can think logically, draw cause-and-effect connections, and identify and eliminate problems and errors, so it can be said to possess a logical thinking ability (Pillai, 2023).

Another feature of strong AI is its ability to solve complex problems (Wang, 2021). While humans have a hard time with such tasks, AI can process large amounts of data, analyze it, and draw conclusions on this basis (Chirkov et al., 2022; Schollaert, 2023). AI is quick to solve such tasks, meaning that it processes data with speed and quality, and these actions require high productivity and efficiency (Hárs, 2022).

Strong AI can interact with human persons, i.e., communicate using voice, gestures, or text, while simultaneously recognizing speech and generating text (Begishev et al., 2020; Denisov et al., 2022).

These capabilities allow AI to make unique decisions autonomously based on accumulated experience (Dolgopolov et al., 2022; Sultonova et al., 2023). This testifies to the presence of will in AI. In this connection, experts wonder whether the decisions made by AI are a manifestation of its independent will or the automated will of its developers (Filipova & Koroteev, 2023). Whatever the answer is, the development of strong AI raises the issue of recognizing it as a quasi-subject of law.

5 DISCUSSION

The conducted analysis of scientific studies points to the following models of legal personhood of AI: the perpetration-by-another liability model, the natural-probable-

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consequence liability model, the quasi-vicarious liability model, and the direct liability model.

The number of adherents to the direct liability model is growing, which is reasonable. AI is rapidly evolving, its skillset is constantly expanding, and soon it will be well justified to charge AI for the actions it wrongfully commits (Beken, 2019). Proponents of this model suggest giving AI a legal status similar to that of a human being, arguing that some AIs have reached a level comparable to the cognitive functions of human thinking and are capable of self-learning and autonomous action (Musina, 2023). With this approach, AI can be defined as a subject of law with all the ensuing consequences (Ivanova, 2019). However, AI cannot exercise its rights and duties in the usual sense, as it acts based on a written code. Today's AI makes quasi-autonomous decisions (Kara Kilicarslan, 2019) that can be characterized as actions-operations. AI lacks self-consciousness, so it is unable to comprehend the consequences of its actions. This fact implies the absence of the subjective aspect of the offense (crime) and thus the lack of corpus delicti (Vasilev, 2022). There arises the issue of prosecuting AI. Neither the duration nor the seriousness of punishment can achieve the goal of prosecution since AI is completely indifferent to punishment and incapable of correcting itself. It can only be corrected by tampering with the software algorithm or by simply disposing of it. At the current stage in the development of AI, the model of direct liability is not practically realizable (Shestak & Ilyicheva, 2019).

Other models proposed by researchers are also justifiably criticized. In particular, the perpetration-by-another liability model envisages situations where the developers and creators of AI are responsible for the actions performed by the AI (Biryukov et al., 2023). In such a case, AI is identified as an object of law and is equated with property (Talimonchik, 2021; Ziemianin, 2021). However, this model is not as applicable to cases where AI operates outside of predetermined algorithms and poses a threat to others. This possibility is created by the ability of AI to learn from its own experience and make independent decisions (Wen & Tong, 2023). It is also critical to consider the risks of AI software being hacked and reprogrammed, which can bring about the most unpredictable consequences.

The conducted investigation shows how the position of experts changed with the development of AI. While at the beginning of the 20th century, less than 1% of researchers supported the model of "direct liability" of AI, over time, as AI became capable of autonomy, learning, and logical thinking, the percentage of supporters of granting legal personhood to AI started to grow. Data obtained from the sample of studies are visualized in Figure 1.

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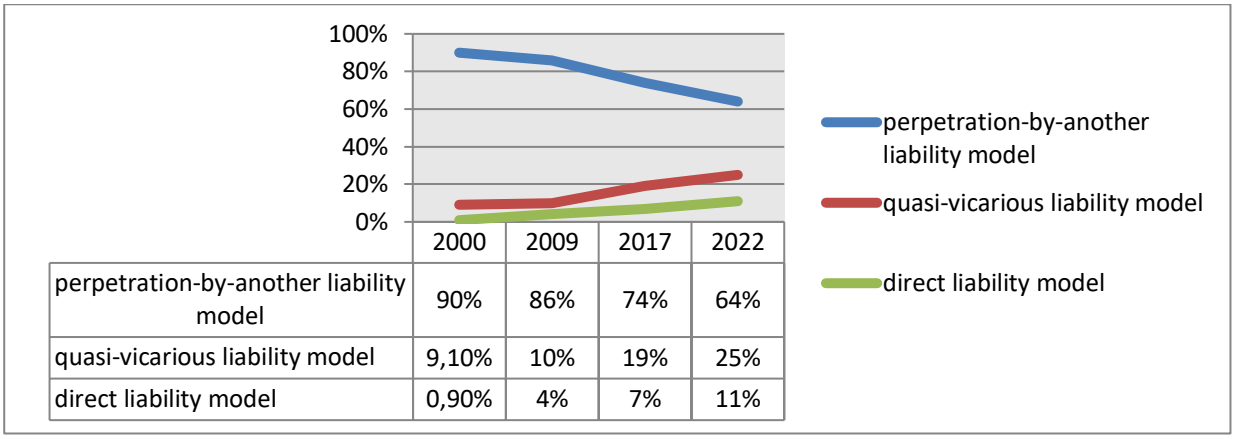

	2000	2009	2017	2022
perpetration-by-another liability model	90%	86%	74%	64%
quasi-vicarious liability model	9,10%	10%	19%	25%
direct liability model	0,90%	4%	7%	11%

Figure 1. Dynamics of growth in the number of adherents of the direct AI liability model

Having examined the leading models of the legal personhood of AI, we conclude that the legal status of AI should be determined through a combined approach (Bagratuni et al., 2023; Vostriakova, 2023). We would like to note that the proposed models of the legal personhood of AI fail to account for the specifics of the digital environment in which AI operates. The development of the digital law system calls for the formation of a categorical apparatus and the definition of the main features and characteristics of digital subjects and objects, as well as the scope of digital rights. Within the established trends and given the advancement of AI, it is optimal to define AI as a quasi-subject of law, i.e., an electronic person. Furthermore, this category will apply only to AI that has certain functions that enable it to act autonomously, self-learn, and develop.

6 CONCLUSIONS

The study concludes that strong AI possesses the following qualities: the ability to process large volumes of data; autonomy, ability to self-learn, and adaptability; and the ability to interact with humans.

Given the ongoing development of AI, there is a need to develop a new model of legal personhood of AI that would define AI as a quasi-subject of law – an electronic person with limited rights and duties who is liable for actions that cause or may cause harm to human life and health and pose a threat to society.

The scope of our research is limited by the sample of sources. As previously mentioned, a total of 266 studies were selected initially, including monographs, reports, and statistics. A more thorough assessment left only 51 sources that specifically described the leading models of legal personhood of strong AI, the key characteristics of AI, and prospects for assigning liability to AI.

Further research on the legal personhood of AI should consider the possibilities and

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features of punishing AI while bearing in mind that the key goal of said punishment is to minimize the consequences of the AI's actions.

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