

ARTIFICIAL INTELLIGENCE & BLOCKCHAIN FOR SD

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Abstract: The article analyzes the role of artificial intelligence and blockchain in achieving the Sustainable Development Goals. The positive and negative effects of digital technologies on the solution of sustainable development problems are considered. Prospective directions of development of artificial intelligence systems are defined.

Key words: artificial intelligence, blockchain, sustainable development goals, prospects.

ИСКУССТВЕННЫЙ ИНТЕЛЛЕКТ И БЛОКЧЕЙН ДЛЯ УСТОЙЧИВОГО РАЗВИТИЯ

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Аннотация. В статье анализируется роль искусственного интеллекта и блокчейна в достижении Целей устойчивого развития. Рассмотрены положительные и отрицательные эффекты цифровых технологий на решение проблем устойчивого развития. Определены перспективные направления развития систем искусственного интеллекта.

Ключевые слова: искусственный интеллект, блокчейн, цели устойчивого развития, перспективы.

The 2030 Agenda for Sustainable Development contains 17 Sustainable Development Goals (SDGs), which include 169 targets to address the challenges to

sustainable development. The development of artificial intelligence (AI), combined with other digital technologies, can help achieve the Sustainable Development Goals (SDGs) by harnessing vast amounts of complex data, processing it, and making accurate predictions. Today we are at a critical stage of defining the role of AI for the future of humanity, positive or negative [1]. The AI Technology Facilitation Mechanism was established by the Addis Ababa Action Agenda to support the implementation of the SDGs and launched in conjunction with the 2030 Agenda for Sustainable Development in September 2015. The DSDG/DESA Sustainable Development Goals Unit served as the secretariat for the "Interagency Task Force on Science, Technology and Innovation for the SDGs" and for the advisory "High-Level Group of Academia, Private Sector and Civil Society" that mobilizes experts from within and outside the UN system to advance the SDGs through science, technology and innovation in various contexts [2].

In 2017, a Council of Europe partnership was established with leading technology companies to share expertise on humanitarian digital issues, and in 2019, the UNESCO report "Steering AI and Advanced ICTs for Knowledge Societies. A Rights, Openness, Access, and Multi-stakeholder Perspective," on managing AI and advanced ICTs in the digital society to achieve the Sustainable Development Goals [3]. The paper recognizes that AI (as well as blockchain and other advanced technologies) is the starting point for achieving the SDGs. But while AI technologies can contribute to breakthroughs in achieving the Sustainable Development Goals (SDGs), they can also have unintended consequences, increasing inequality and discrimination. There is a need for a common methodological framework for countries to measure the impact of AI, implementing a multidisciplinary, multi-stakeholder approach, to achieve the Sustainable Development Goals. AI strategies must include appropriate regulatory frameworks to ensure transparency, safety, information sharing, experiences, best practices, practical recommendations.

In 2021, the United Nations (Department of economics and social affairs Office of the Secretary-General's Envoy on Technology) produced a resource guide: Resource Guide on AI strategies (2021). Countries are encouraged to use ROAM (Human Rights, Openness, Accessibility, Multistakeholder participation) indicators at the national level. The report covers a wide range of issues related to the development of AI: freedom of speech, access to information, privacy protection, digital media, information literacy, the gap between countries in the development of AI [4].

As reported by Eurasia Review News Agency on February 20, 2021, scientists from the Andalusian Data and Computational Intelligence Research Institute of the University of Granada (DaSCI) together with specialists from the private company

Ferrovial and colleagues from the Royal Spanish Academy of Engineering (RAI) conducted a systematic study of the contribution of AI and blockchain systems (for fair and transparent decision-making forms) to 17 sustainable development goals. The authors reviewed over 1,000 bibliographic references related to three dimensions of sustainability: economic, social, and environmental. It is concluded that AI and digital technologies are the main means to advance on SD [5].

According to a review by Kazi Mohammad, Abrar Faisal, to date there is a critical research gap due to the lack of research that assesses the impact of AI on all SDGs together, rather than individually. It is concluded that the development of AI empowers the achievement of the SDGs. It has an impact on productivity, social life and security, stability and inclusiveness, and the reduction of natural and environmental threats in different regions of the world. AI makes it possible to identify and predict the emergence of poor regions, problems with poverty and food shortages and offer their solutions through "smart" resource allocation; corruption prevention; health risk management, early diagnosis and prevention of disease development; prevention of the spread of epidemics, etc. [6]

The study by R. Vinuesa et al. is devoted to the study and assessment of the impact of AI on the achievement of the Sustainable Development Goals using a consensus of experts [7]. The authors note that they were able to find numerous publications indicating that AI can potentially serve as a means of achieving many of the SDG goals and indicators. However, the use of this evidence is hampered by the fact that it was obtained in a laboratory setting, based on a limited set of data and has limited predictive power. Therefore, extrapolating this information to the real world remains a challenge, given the rather rapid changes in the environment (including those influenced by technological progress). The issue of the rigidity of society's response to changes associated with AI also remains practically unexplored. A systematic review of the literature showed that AI can contribute to 134 objectives across all goals, but can also hinder 59 objectives. It was found that a positive impact on the achievement of the SDGs was found in 79% of the publications described: primarily SDG 1 (poverty eradication), 4 (quality education), 6 (clean water), and 9 (industrialization). Negative impact is noted in 29% of cases: primarily SDG 1 (poverty eradication), 4 (quality education), 7 (clean energy), 10 (reducing inequality).

It has been documented that AI can act as both an enabler and a hindrance to almost any SDG. For example, AI can support low-carbon energy systems with a high degree of renewable energy and energy efficiency integration needed to address climate change (SDG 13). However, these efforts can be undermined by the high

energy requirements for AI applications, especially if non-carbon-neutral energy sources are used. In addition, increased access to information about the state of ecosystems could lead to overexploitation of resources.

In an increasingly "digital transformation," the use of innovative management tools such as blockchain can play a special role in achieving the SDGs. It is associated with the creation of modern infrastructure and well-functioning state institutions. A critical area of research for the safe integration of AI with blockchain is understanding the disasters that can be caused by a systemic failure in AI technology [8].

Conclusions.

To assess the impact of AI on the SDGs, publications that reflect not only positive results, but also document failures; that avoid bias on the part of AI developers; that contain the results of long-term, interdisciplinary and multilateral research using combined human-machine analysis tools; that explore directions that have no immediate commercial interest; that promote initiatives to assess the social, ethical, legal and environmental implications of new AI technologies; posing and addressing cybersecurity and privacy concerns of citizens and their data.

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