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Compilers of the publication:

Упорядники видання:

Prof. dr. Rasa Braslauskienė,

Doc. dr. Reda Jacynė,

Dr. Maryna Ponomarenko.

Conference Scientific Committee:

Науковий комітет конференції:

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Assoc. Prof. Dr. Ioana Todor (“1 Decembrie 1918” University of Alba Iulia, Romania).

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ARTIFICIAL INTELLIGENCE IN DESIGN: BENEFITS AND DRAWBACKS

Slityuk Olena

Associated Professor Dr., Kyiv National University of Technologies and Design, Ukraine

ORCID: 0000-0001-9058-9979

Elena1200elena@gmail.com

Hrytsai Sofia

Student, Kyiv National University of Technologies and Design, Ukraine

sofiia.grytsai@gmail.com

Abstract. The paper explores the role and impact of artificial intelligence (AI) in contemporary design, emphasizing the advantages and disadvantages of using this technology. The consequences of AI implementation in the field of design are analyzed, assessing its influence on the creative process and application efficiency. The advantages and disadvantages of using artificial intelligence in the design industry are identified.

Keywords: artificial intelligence, design, creativity, automation, innovations.

Introduction. With the increasing integration of artificial intelligence (AI) into various aspects of life, the design industry is facing new challenges and opportunities. AI opens up a wide range of tools for designers that can streamline their creative process and optimize outcomes. However, this raises a series of questions and discussions about the impact of AI on the design industry and the role of humans in this context. The main goal of this work is to explore the influence of artificial intelligence on the modern design industry, defining the possibilities and limitations of AI use in the creative process. It also aims to identify the advantages and disadvantages of employing AI in the design industry.

Theoretical part. Research in the field of Artificial Intelligence (AI) indicates that its operation is grounded in machine learning methods and deep neural networks. AI processes extensive data, utilizing it to address diverse tasks. The algorithms' ability to self-improve makes AI a powerful tool in technological and scientific development (Plevak et al., 2023). Neural networks, a key subset of AI, emulate the structure and functions of the human brain, making them effective in image recognition, language processing, and recommendation systems. The application of neural networks in the design industry opens new perspectives for creative use and proves to be an effective tool. The use of AI in design brings advantages such as high speed, automation, and error reduction, but it also reveals limitations in creativity and emotional aspects (Korenyak, 2023).

Methodology. Special attention is given to studying the impact of artificial intelligence (AI), particularly neural networks, in the field of design, involving various research approaches. A review of scientific literature on AI, focusing on machine learning and deep neural networks across different domains. The advantages and disadvantages of AI in design are analyzed, referencing studies by Mohonko K. and Korenyak Y. The goal of this methodology is to provide a detailed understanding of AI, particularly neural networks, in the dynamic field of design.

Results. The operation of artificial intelligence is based on machine learning methods and deep neural networks. AI processes large volumes of diverse data, analyzing, systematizing, and utilizing them to address various tasks. The algorithms' ability to self-improve makes AI a powerful tool in the field of technological and scientific development (Plevak et al., 2023).

Neural networks, which are a key subset of AI, emulate the structure and functions of neural networks in the human brain. Their properties of self-learning and adaptation to new data make them an effective tool in image recognition, natural language processing, and recommendation systems.

The use of neural networks in various fields allows for solving tasks with significantly higher speed and accuracy. In particular, in the design industry, AI based on neural networks can generate high-quality images and texts, opening new perspectives for creative use and providing designers with an effective tool.

Modern technologies prompt a reconsideration of roles in the field of design, challenging previously recognized exclusively human competencies. This may necessitate a review of professional standards and methods of work, as well as adaptation to a new stage of development, where intelligent systems will quickly surpass traditional methods (Slityuk et al., 2023).

The organization and analysis of extensive data within neural networks allow them to evolve, providing the capability to create masterfully crafted images and text, similar to those generated by humans. This indicates broad prospects for application and a powerful impact of AI in creative domains, changing the paradigm of design activities. The use of neural networks in the field of design (graphic, interior, web, motion, game design, and video production) has already become a standard, integrating into production processes. For instance, AI is successfully employed in creating logos, website prototypes, animated backgrounds, and characters for movies. Some algorithms are even capable of generating projects similar to those previously created exclusively by humans, posing a real challenge for creators in various fields of art and design. In contemporary creative solutions, several neural networks are actively utilized, such as Midjourney, DALL-E, Stable Diffusion, and ChatGPT (Kauk, 2023).

The design industry has always been open to innovation, viewing it as a means to facilitate routine tasks. AI is already actively used in the daily practices of designers, contributing to the generation of templates, layouts, and the optimization of production processes. These technologies ensure comfortable and high-quality work in the design industry. AI also allows quickly providing clients with several product options, expanding the boundaries of creativity and offering unexpected ideas.

The use of AI in design, as established during the research, has been found to have a series of advantages and disadvantages. Firstly, the high speed of AI is impressive - its ability to analyze large volumes of data and generate results within seconds allows for quick adjustments. Automation is another significant advantage where AI performs tasks that would take a lot of time for professionals. Reducing the number of errors is yet another strong point of AI; research confirms its ability to provide quality results, reducing the likelihood of errors compared to humans. It is also necessary to note the advantage of personalization, where AI creates personalized designs based on data analysis, identifying user preferences and needs.

Even with all the listed advantages of using artificial intelligence in design, there are some drawbacks. One of them is the inability to detect the creativity and intuition of designers, constrained by algorithmic approaches and data analysis, limiting its capacity for creativity and the generation of new ideas. Additionally, the lack of feelings and emotions in AI creates limitations, as it does not experience emotions based on physiological and psychological reactions. Technical dependence of AI is evident in the limitation of data and solutions that do not consider a broad cultural and social context. Moreover, AI requires human involvement to define goals and evaluate results, which often need refinement; hence, it cannot fully replace a qualified professional (Korenyak, 2023).

It is important to note philosophical limitations, including the constraints of the computational approach and the lack of self-reflection, creativity, and flexibility in AI systems. Technical limitations manifest in the inability to achieve "strong" intelligence, primarily restricted to solving specific tasks (Dobrovolska et al., 2019). Philosophical aspects such as self-awareness and creativity remain unresolved drawbacks. Contemporary research in artificial intelligence is characterized by a post-classical approach, emphasizing interdisciplinarity and highlighting the growing importance of aspects such as axiology and pragmatism. Despite this, research in this direction remains relevant and promises further development.

Conclusions. Despite concerns about the impact of artificial intelligence on creativity and design, its potential in fostering creativity and optimizing design processes is undeniable. With the continuous development of AI, designers are compelled to adapt to these new technologies to ensure their competitiveness and expand the possibilities of creative self-expression in the ever-changing world of design. The paper explores the challenges and opportunities of using artificial intelligence in design, identifying its advantages and disadvantages, and analyzing the consequences of its application on creativity and efficiency. Artificial intelligence in design becomes an essential tool, fostering interaction between humans and algorithms to achieve unique and targeted results.

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Klaipėdos universiteto leidykla, Herkaus Manto g. 84, Klaipėda Tel. (8 46) 398891, el. paštas: leidykla@ku.l