TRENDS OF USE OF ARTIFICIAL INTELLIGENCE IN GRAPHIC DESIGN

Abstract The rapid advancement of artificial intelligence (AI) technology has brought significant changes to the field of graphic design. This article addresses the evolving trends in the utilization of AI within graphic design, aiming to analyze its impact, explore ethical considerations, and forecast future developments.

With the increasing integration of AI into graphic design processes, there arises a need to understand the implications, challenges, and opportunities associated with this technology. The question of how AI influences creativity, communication with the audience, and ethical considerations remains pertinent.

The objective of this article is to examine contemporary trends in the application of artificial intelligence within the realm of graphic design. Through an analysis of current research and practices, the article seeks to elucidate the multifaceted aspects of AI adoption in graphic design processes.

The study reveals that AI technology has significantly streamlined routine tasks, enhanced personalization capabilities, and expanded the possibilities for innovative design solutions. Furthermore, it highlights the ethical considerations surrounding AI implementation in graphic design, emphasizing the importance of transparency, privacy, and equitable access.

In conclusion, the integration of artificial intelligence in graphic design offers immense potential for efficiency, creativity, and user engagement. However, it necessitates a balanced approach that preserves the human touch, fosters ethical practices, and encourages ongoing dialogue and collaboration within the design community. Embracing AI while upholding ethical standards will pave the way for a sustainable and inclusive future in graphic design.

Keywords: artificial intelligence, graphic design, machine learning, automation, creativity.
Formulation of the problem. Artificial intelligence (AI) is revolutionizing approaches to the creation of graphic content, but along with this, questions of ethics, creating uniqueness and preserving human influence in the design process arise. As a result of this situation, certain problematic aspects rise, which are considered in the article.

Analysis of recent research and publications. Both scientists and practitioners have always paid significant attention to issues of using AI in graphic design. Significant contributions were made by: K. Beskorovainy [1], A. Chibalashvili [3], K. Brown [4], W. Chen, X. Liu [5], R. Johnson [7], A. Martinez, M. Rodriguez [11], J. Smith [13], L. Wang [14-15].

However, some issues regarding the theoretical aspects and development trends of the use of artificial intelligence in graphic design have not been fully explored by domestic scientists and thus require careful study.

The purpose of the article is to systematically analyze current trends in the use of artificial intelligence in graphic design, to identify key challenges and prospects for future development.

Results and discussion. In the world of graphic design, the use of artificial intelligence (AI) and its impact on the creative process, user experience, and overall aesthetics of the products created is becoming extremely relevant. Modern trends demonstrate the increasing introduction of artificial intelligence into various areas of graphic design, ranging from automated drawing and logo creation to the development of interactive interfaces and personalized media content.

The hypothesis is that AI can become both a powerful tool to facilitate the work of designers and raise serious challenges related to ethics, individuality, and responsibility for content creation. According to recent research, the use of AI in graphic design has grown by 35% over the past two years, indicating the rapid development of this industry.

For example, according to a survey of leading designers, 65% of them believe that AI greatly facilitates their work and speeds up the design process. However, 40% respondents express concern about possible interference with the human creative process and loss of individuality in products. Such positions reflect the need for a deeper study of the impact of AI on graphic design and content production [1-2].

Statistics demonstrate that interest in the use of artificial intelligence in graphic design has grown significantly in recent years. According to research published in Graphic Design Trends magazine, more than 70% of industry professionals believe that AI affects their work, and more than 50% of them are already using AI in their projects. However, only 30% of them believe that they fully understand the potential of AI and its impact on graphic design [3-4].

The key question is how to balance the benefits of automation and creativity in graphic design, as well as how to ensure ethical and cultural standards for the use
of AI in this field. Such issues require deeper analysis and research to create appropriate strategies for the development and regulation of this area.

Analysis of the modern literature shows a variety of opinions on the use of AI in graphic design. Some authors emphasize the benefits of automation and productivity, while others express indignation at the possible loss of creativity and uniqueness in products. The literature analysis also reveals gaps in research on the ethical aspects of using AI in graphic design, which requires further research and attention [5-6].

Modern trends in the use of AI in graphic design reflect various opportunities and perspectives that this technology brings to the creative process and interaction with users (Fig. 1). Let us consider the key aspects of using AI in graphic design:

- Automation of content creation processes: one of the most important trends is the use of AI to automate the processes of creating graphic content. From automatic logo creation to vector drawing generation, AI can make the work of designers much easier and faster [7].

- Personalization and adaptation of content: another important trend is the use of artificial intelligence to personalize and adapt graphic content to the needs of users. With the help of machine learning algorithms, information can be adapted to the preferences, behavior, and needs of specific audiences [8].

- Development of interactivity and data visualization: AI contributes to the development of interactivity and data visualization in graphic design. From animated infographics to interactive websites, AI helps make information more accessible and understandable to the audience [9].

- Application of artificial intelligence in product design and UX/UI design: AI is used to optimize product design and develop user experience (UX/UI). Algorithms for analyzing user behavior help to improve the efficiency and convenience of product interaction [10].

- Art creation development with AI: a new area of AI application is art creation. From the generation of unique artworks to the development of computer art, AI expands the possibilities of creativity and expression in graphic design [11].

- Ethical and security challenges: however, along with the growing use of AI in graphic design, ethical and security challenges also arise. The issues of privacy, responsibility for content creation, and the prospects for the mass application of AI remain relevant [12].
Such trends, described on the basis of domestic and foreign research, indicate a significant impact of artificial intelligence on graphic design and its future development.

The impact of artificial intelligence on the creative process in graphic design and communication with the audience is both significant and promising. AI helps designers to automate routine tasks such as image processing, color and composition selection, freeing up time for more creative processes. The use of artificial intelligence helps to increase the productivity of designers by performing tasks quickly and accurately. Personalization of content based on user data analysis allows to create a more convenient and interesting experience for each consumer. Optimization of UX/UI design with the help of artificial intelligence improves user experience and ensures effective communication with the audience. The development of interactivity through AI allows to create more engaging and interesting content, thus increasing interaction with the audience and also increasing the level of its attention (Table 1)

**Fig. 1. Trends in the use of AI in graphic design**
### Table 1

The influence of artificial intelligence on the creative process in graphic design [13-15]

<table>
<thead>
<tr>
<th>Aspects</th>
<th>The impact of artificial intelligence</th>
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<tbody>
<tr>
<td>Automation of creative tasks</td>
<td>AI helps automate routine aspects of the creative process: creating templates, processing images, choosing colors, etc.</td>
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<tr>
<td></td>
<td>It frees designers from monotonous tasks and allows them to spend more time on creativity and strategic thinking.</td>
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<tr>
<td>Productivity improvement</td>
<td>The use of AI can significantly increase the productivity of designers: the speed of task completion, and the quality of work.</td>
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<td></td>
<td>It helps to improve the quality and accuracy of work.</td>
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<tr>
<td>Personalization of content</td>
<td>AI allows to create personalized content according to the needs and preferences of one’s audience.</td>
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<td></td>
<td>It improves content perception and increases audience engagement.</td>
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<tr>
<td>Optimization of UX/UI design</td>
<td>It is used to analyze user behavior and improve user experience: optimize navigation, placement of elements, etc.</td>
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<tr>
<td></td>
<td>It facilitates communication with the audience and improves their experience.</td>
</tr>
<tr>
<td>Development of interactivity</td>
<td>It helps to create more interactive and engaging content that increases audience’s attention.</td>
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However, along with its benefits, the use of artificial intelligence also poses certain challenges. For example, the possibility of losing the individual approach and originality in content creation, as well as ethical and privacy issues of data use. Thus, the effective use of AI in graphic design requires an understanding of these challenges and the ability to balance them with the benefits to ensure quality communication with the audience and achieve the desired results in the creative process.

The use of artificial intelligence in graphic design raises a number of ethical issues that require attention and further discussion:

- Transparency and responsibility: one of the key ethical issues is the need for transparency in the use of artificial intelligence in graphic design. Designers and developers should be responsible for the algorithms and models they create and ensure that their impact on the final result is clear to users.
• Data security: the use of artificial intelligence in graphic design may require the collection and processing of a large amount of personal data from users. Ensuring the confidentiality and security of this data is a critical ethical issue that requires appropriate safeguards.

• Credibility and manipulation: artificial intelligence can be used to create credible content that may be perceived as truthful but is actually manipulated or falsified. This threatens the credibility of information circulating in both online and offline environments.

• Algorithmic decision effects: the use of artificial intelligence algorithms can lead to unintended consequences and hidden biases. For example, automatic face recognition systems and image editing filters may be vulnerable to biased approaches to gender, race, or ethnicity.

• Issues of authorship and ownership: the use of artificial intelligence may raise questions about the authorship and ownership of intellectual property. These ethical aspects of the use of artificial intelligence in graphic design require careful examination and consideration in the process of technology development and implementation. It is important to develop ethical standards and regulatory frameworks to ensure fair, safe, and effective use of AI in graphic design.

The prospects for the future development of AI in graphic design are both exciting and promising in terms of transforming the industry. Here are some key predictions about its impact on the industry:

1. Development of automation and process optimization: AI will continue to improve and expand the automation of routine tasks in graphic design, thus allowing designers to more efficiently spend their time on more complex and creative tasks.

2. Increasing personalization of content: AI will be used to create more personalized content that will adapt to the needs of specific audiences, making the interaction with content more agile and meaningful for each user.

3. Empowerment of UX/UI design: AI will influence the development of UX/UI design by simplifying development processes, improving user experience and providing more effective interaction with products and services.

4. Creating new creative opportunities: AI opens up new horizons for creativity in graphic design, allowing designers to experiment with artificial intelligent systems in order to create unique interactive visual solutions.

5. Increasing efficiency and reducing costs: the use of AI in graphic design can lead to increased efficiency and reduced costs for content development and production, which will become a competitive advantage for businesses.

Overall, the impact of AI on graphic design is expected to be both significant and dynamic. It will contribute to the development of new technologies, the creation of innovative products and services, and change the approach to communicating with the audience. However, it is also important to consider ethical and social aspects
of the introduction of these technologies to ensure their balanced and effective implementation.

A balanced use of AI and human creativity in graphic design is important to ensure high-quality and effective results, as well as to maintain ethical standards. Here are some guidelines for doing so:

- Preserving the role of the designer: designer should remain the central figure in the process of creating graphic content. Artificial intelligence should be used as a tool to support and enhance the creative process, not as a replacement for the designer.

- Using AI to automate routine tasks: AI can be used to automate a number of routine tasks in graphic design, such as image optimization, element alignment, etc. This will allow designers to focus on more complex and creative aspects of their work.

- Stimulating innovation and experimentation: in order to develop the effective use of AI in graphic design, it is important to create an environment that fosters innovation and experimentation. Designers should be provided with opportunities to try out new technologies and techniques, and facilitate exchange of knowledge and experience.

- Development of ethical standards: it is important to develop and implement ethical standards in the field of graphic design that take into account the use of AI, which includes ensuring transparency in the use of algorithms, protecting data privacy, as well as avoiding discrimination and promoting equal access to technology.

- Support training and education: training and professional development of designers on the ethical and practical aspects of the use of AI is an important element in the development of the field of graphic design. Training programs should include skills in using AI technologies and discussing ethical issues.

- Fostering dialogue: it is important to foster an open dialogue between designers, technology developers, academics and the public about the use of artificial intelligence in graphic design to identify and address ethical and social issues in this field.

- Development of ethical standards and the balanced use of artificial intelligence and human creativity in graphic design will contribute to the creation of innovative and effective solutions, as well as ensure preservation of the values and principles of the design profession.

**Conclusions.** As a result of this research, it was established that AI quickly and confidently enters the field of graphic design, thus providing new opportunities for automating routine processes, creating personalized content and developing interactive solutions. The use of AI in graphic design affects the change in the creative process, accelerates the development and optimization of content, and also stimulates innovation in the field of UX/UI design.
In the course of the research of the impact of AI on the creative process in graphic design and communication with the audience, it was established that AI greatly facilitates the work of the designer, allowing to focus on more complex and creative tasks. At the same time, it is important to maintain a balance between automation and human creativity to ensure quality and originality of the result, as well as to preserve the unique contribution of each designer. Having considered the ethical aspects of the use of artificial intelligence in graphic design, a number of key issues were identified, such as transparency and responsibility in the use of algorithms, security of user data, plausibility and manipulation of information, issues of authorship and ownership. Ethical standards and regulatory frameworks must be developed and implemented to ensure the ethical use of AI in graphic design.

As for the future development of AI in graphic design, we can predict further growth of the process of automation, development of personalized content, increased efficiency and reduced development costs, as well as the emergence of new creative opportunities. However, it is important to constantly consider ethical aspects and maintain a balance between AI and human creativity. Based on the findings, further recommendations can be made for the balanced use of artificial intelligence and human creativity in graphic design, as well as for the development of ethical standards in this area. It is important to prioritize human creativity, stimulate innovation, ensure transparency and responsibility in the use of AI, and educate designers on ethical principles and practices. This is the only way to ensure the sustainability and efficiency of graphic design development within the rapidly changing technological environment.

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