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METHODOLOGY OF CREATING WORKS OF ART USING DIGITAL TECHNOLOGIES

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Abstract: This article explores the methodology of creating works of art using digital technologies. It analyzes the integration of digital tools in the creative process of contemporary art, highlights key methods and strategies employed by artists, and evaluates their impact on aesthetic and conceptual dimensions of artwork. The study also addresses how digital art methodologies reshape educational practices in art institutions, redefine authorship, and contribute to the democratization of art production and distribution. By examining current trends and innovative approaches, the article emphasizes the significance of digital technologies in shaping the future of art.

Keywords: Digital art, creative process, art methodology, digital technologies, graphic tablets,3D modeling, virtual reality, augmented reality, artificial intelligence, digital painting, art education.

RAQAMLI TEXNOLOGIYALARDAN FOYDALANGAN SAN'AT ASARLARI YARATISH METODOLOGIYASI

Annotatsiya: Ushbu maqola raqamli texnologiyalardan foydalangan holda san'at asarlarini yaratish metodologiyasini ko'rib chiqadi. U raqamli vositalarning zamonaviy san'at ijodiy jarayoniga integratsiyalashuvini tahlil qiladi, rassomlar tomonidan qo'llaniladigan asosiy uslub va strategiyalarni yoritib beradi hamda ularning san'at asarlarining estetik va kontseptual jihatlariga ta'sirini baholaydi. Tadqiqot, shuningdek, raqamli san'at metodologiyalarining san'at muassasalaridagi ta'lim amaliyotini qanday o'zgartirishi, mualliflikni qayta belgilashi va san'at, ishlab chiqarish hamda tarqatishni demokratlashtirishga hissa qo'shishini o'rganadi. Maqolada zamonaviy tendentsiyalar va innovatsion yondashuvlarni o'rganib chiqib, san'at kelajagini shakllantirishda raqamli texnologiyalarning ahamiyati ta'kidlangan.

Kalit so'zlar: Raqamli san'at, ijodiy jarayon, badiiy metodologiya, raqamli texnologiyalar, grafik planshetlar, 3D modellashtirish, virtual haqiqat, kengaytirilgan haqiqat, sun'iy intellekt, raqamli rasm, badiiy ta'lim.

МЕТОДОЛОГИЯ СОЗДАНИЯ ПРОИЗВЕДЕНИЙ ИСКУССТВА С ИСПОЛЬЗОВАНИЕМ ЦИФРОВЫХ ТЕХНОЛОГИЙ

Аннотация: В данной статье рассматривается методология создания произведений искусства с использованием цифровых технологий. Анализируется интеграция цифровых инструментов в творческий процесс современного искусства, выделяются ключевые методы и стратегии, используемые художниками, и оценивается их влияние на эстетические и концептуальные аспекты произведений искусства. В исследовании также рассматривается, как методологии цифрового искусства меняют образовательную практику в художественных учреждениях, переосмысливают авторство и способствуют демократизации производства и распространения произведений искусства. Рассматривая современные тенденции и инновационные подходы, статья подчёркивает значение цифровых технологий в формировании будущего искусства.

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Ключевые слова: Цифровое искусство, творческий процесс, художественная методология, цифровые технологии, графические планшеты, 3D-моделирование, виртуальная реальность, дополненная реальность, искусственный интеллект, цифровая живопись, художественное образование.

Introduction. In the 21st century, rapid technological progress is fundamentally transforming all aspects of human activity, including the visual arts. The advent of powerful digital tools has revolutionized the way artists create, produce, and present their work [3]. Today, the creation of works of art increasingly involves the use of graphic tablets, 3D modeling software, virtual and augmented reality (VR/AR), artificial intelligence (AI) and other digital technologies that were unthinkable in traditional artistic practice [8]. As a result, art-making methodology is rapidly evolving. Artists are no longer limited to traditional techniques and materials; instead, they work in a hybrid medium that combines analog and digital processes [7]. These changes require a rethinking of how art is created, taught, and consumed in the digital age.

The purpose of this article is to examine new methodologies used to create artworks using digital technologies, analyze their aesthetic and conceptual aspects, and explore their role in contemporary art education.

The digital transformation of art is based on several key technological advances. The widespread use of graphics tablets (such as Wacom, Huion, and XP-Pen) allows artists to create highly detailed digital paintings with tactile precision. These tools, combined with powerful software such as Adobe Photoshop, Corel Painter, Clip Studio Paint, and Procreate, open up limitless possibilities for visual experimentation [3]. Digital brushes, texture overlays, and dynamic lighting effects allow artists to expand creative boundaries beyond traditional media.

Beyond creating two-dimensional (2D) objects, 3D modeling has become an integral part of contemporary art methodology. Programs such as Blender, ZBrush, Autodesk Maya, and Cinema 4D allow artists to create digital forms in virtual space [4]. These three-dimensional works can be used to create animations, video installations, digital sculptures, or even transferred to the physical world using 3D printing technology. This versatility makes digital 3D art an indispensable tool in contemporary creative practices.

Virtual reality (VR) and augmented reality (AR) represent a further development in art creation methodology. VR tools such as Oculus Medium, Tilt Brush, and Gravity Sketch enable artists to create immersive, interactive environments in which the viewer perceives the artwork as a spatial event [8]. This represents a profound shift from traditional passive art perception to active interaction. Similarly, AR tools allow artists to overlay digital content onto real-world environments, blending the physical and virtual.

The emergence of artificial intelligence (AI) in art has opened up entirely new approaches to the creative process. AI systems such as DALL·E, Midjourney, and Stable Diffusion generate visual content based on text cues or datasets provided by the artist [5]. While this raises complex questions about authorship and originality, it also opens up new possibilities for collaborative creativity between humans and machines. Many contemporary artists now incorporate AI-generated images into their practice, exploring the intersection of human design and algorithmic creativity.

Another important factor is the conceptual aspect of digital art. The medium itself influences the message: the aesthetics of digital art often reflect the nature of the tools used. Pixel compositions, glitch aesthetics, procedural generation, and interactive interfaces are all hallmarks of digital creativity [9]. Artists must be mindful of how these technological characteristics influence the meaning of their work. Moreover, digital technology has changed the way art is presented and distributed.

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Online platforms (such as Behance, ArtStation, DeviantArt, and Instagram) allow artists to showcase their work to a global audience. The advent of NFTs (non-fungible tokens) has led to new methods of verifying ownership and monetizing digital art [6]. Virtual galleries and online exhibitions further expand the reach of diverse audiences.

In the context of art education, the adoption of digital methodologies has become crucial. Leading art institutions worldwide have integrated digital tools and methods into their curricula. Courses in digital painting, 3D modeling, animation, virtual and augmented reality, and creative programming prepare students for work in contemporary creative industries [1]. Project-based learning and studio practice using digital media foster technical competence and creative innovation. Furthermore, teaching digital methodologies fosters students' critical thinking about technology and its cultural implications [9]. Issues of ethics, authorship, digital identity, and the influence of algorithmic systems occupy a central place in contemporary artistic discourse. By exploring these issues, students gain a deeper understanding of the complex relationship between art and technology. Finally, the democratizing effect of digital technologies cannot be underestimated. Digital tools are becoming increasingly accessible, allowing a wider range of people to participate in artistic creation [7]. This contributes to the diversification of opinions in the art world and supports the development of new forms of collective creativity.

The methodology of creating artworks using digital technologies is multifaceted and dynamic. It encompasses a wide range of tools and techniques that expand the expressive possibilities of art. From graphic tablets and 3D modeling to virtual and augmented reality environments and images generated by artificial intelligence, digital technologies are transforming how art is conceived, created, and perceived [3]. This transformation is not only technical but also conceptual, impacting the aesthetics, narratives, and cultural significance of contemporary art. Moreover, it is changing art education and democratizing access to creative tools. As the digital landscape evolves, artists must critically and creatively engage with new technologies to realize their full potential.

Prospects for the Development of Digital Art Methodology and New Research Approaches. Contemporary digital art is developing in a context of continuous technological change, making its methodology not only interdisciplinary but also dynamically updated. One of the key areas of methodology expansion is the integration of creative programming and computational methods into artistic practice. Languages and environments such as Processing, p5.js, TouchDesigner, and Unity allow artists to move beyond traditional visual production and embrace algorithmic thinking. The use of programming in art changes the very nature of the creative process, as artists gain the ability to create not only static works but also interactive systems that respond to user behavior or external data. Thus, digital artistic practice becomes closely linked to data science, interface design, and cognitive research.

Rethinking the interaction between artist and audience also plays a key role in the development of new methodologies. Traditionally, viewers perceived a work of art as a finished object, whereas digital technologies allow them to become active participants in the creative process. In interactive installations created using sensor systems, motion tracking technologies, or biometric sensors, viewers can alter the composition, structure, or behavior of the art object. This shifts the focus from the artistic object to the process of interaction, shaping a new type of aesthetic experience—"participatory aesthetics." This approach requires the artist to develop complex interaction scenarios and analyze user experience (UX), which was previously outside the scope of artistic methodology. Furthermore, an important area of development in digital artistic practice is the use of big data and network structures. Some artists work with open data sets, creating visualizations reflecting environmental, social, or economic processes. Others use network algorithms to study the dynamics of communication, social interactions, and digital culture. This methodological approach facilitates the emergence of new forms of conceptual art,

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in which the work is not limited to a visual image but rather represents a research tool or model of a complex system. In this context, digital art becomes an important mediator between the humanities and technical disciplines.

The impact of global digital ecosystems on artistic methodology deserves special attention. Social networks, cloud services, and collaboration platforms are not only changing the way artworks are displayed and distributed but are also becoming fully-fledged tools for collective creativity. Artistic projects realized through platforms like GitHub, Google Colab, or online 3D model editors demonstrate the potential for collaborative creativity that transcends geographical and professional boundaries. The emergence of such methods actively contributes to the development of open art, based on the principles of the free exchange of knowledge, code, and digital resources.

The development of multimodal artificial intelligence systems is also significantly influencing methodology. New AI platforms are capable of not only generating images but also analyzing artistic styles, suggesting compositional solutions, creating animations, and simulating the physical properties of materials. This expands artists' creative possibilities, but also raises ethical and legal questions for researchers. Academic debate is increasingly addressing issues of algorithmic bias, the ecological footprint of computation, copyright, and the cultural coding of the data on which AI models are trained. Digital art methodology in this context involves critically reflecting on technologies and developing sustainable creative practices that take into account the social and environmental consequences of their use.

It's important to emphasize that the digital environment demands new competencies from artists, not only related to software proficiency but also to an understanding of the operating principles of digital systems. Artists working in the digital sphere are increasingly becoming researchers, programmers, interface designers, and data analysts. This expansion of professional roles is contributing to the transformation of art education, focusing it on interdisciplinary approaches and a project-based research approach. Curriculums incorporating robotics, sensor technologies, mechatronics, interactive design, and contemporary media theory are shaping a new generation of artists capable of synthesizing artistic vision with technical expertise.

Thus, the development of digital art methodology reflects the processes of global digitalization of society. It is becoming a space where technology, culture, philosophy, and social practices intersect. This interdisciplinary field demands a flexible, innovative approach from artists and researchers, as well as an openness to new forms of interaction between humans and machines. As a result, digital art continues to transcend traditional aesthetic categories, shaping new methods of cognition, new forms of visual communication, and new models of creativity.

Conclusion. Looking ahead, the convergence of art and technology promises to further enrich the visual arts. By mastering digital methodologies, artists can contribute to the ongoing evolution of visual culture and actively participate in shaping the future of creative expression.

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