

UDC 004.8:741.584

DOI <https://doi.org/10.32782/2415-8151.2025.35.49>

THE APPLICATION AND IMPACT OF AI-GENERATED CONTENT ON ANIMATION CREATION

Chen Lingqiong¹, Khynevykh Ruslana Viktorivna²

¹ Postgraduate Student at the Department of Multimedia Design,
Kyiv National University of Technologies and Design, Kyiv, Ukraine;
Shaanxi University of Science and Technology, Xian, China,
e-mail: 2210ZW001@sust.edu.com, orcid: 0009-0005-4035-2435

² Candidate of Technical Sciences, Associate Professor at the Department of Multimedia Design,
Kyiv National University of Technologies and Design, Kyiv, Ukraine,
e-mail: h.ruslana.v@gmail.com, orcid: 0000-0002-3130-5785

Abstract. *The purpose of this study is to explore the application and impact of artificial intelligence-generated content (AIGC) on animation development, focusing on how AIGC transforms traditional animation creation processes, challenges established artistic workflows, and explores its work in restoring animation quality.*

Methodology. *This study comprehensively reviews the latest research findings on AIGC technology in animation through literature analysis. The research results are demonstrated through case analysis, illustrating the practical application of AIGC technology in animation creation and its technological advancements.*

Results. *AIGC has significantly transformed the animation creation model by shifting from the traditional human collaboration approach to a more efficient human-AI collaboration model. In this new paradigm, creators can provide specific content and learning instructions to AI, enabling the AI to generate content that aligns with the creator's vision. This collaboration enhances the efficiency of the creative process, allowing creators to focus more on artistic expression and creativity. Traditionally, animation creation has been labor-intensive, requiring considerable time and human resources. AIGC tools now automate workflows involving text-to-image, image-to-video, and video-to-audio transformations. However, while AIGC tools excel at generating images and videos, audio design still relies on traditional methods due to the emotional and nuanced nature of sound creation, an area in which current AI technologies still struggle to replicate fully. Additionally, AIGC is proving invaluable in restoring classic animated films. With its powerful image processing capabilities, AIGC can repair damaged frames, enhance image quality, and restore color fidelity. This ability to revive and improve classic works highlights AIGC's potential to preserve animation history while enhancing the viewer experience.*

Scientific novelty. *This paper highlights the pioneering use of AIGC in transforming traditional animation production methods, integrating advanced AI techniques across all stages of creation. The research offers new insights into how AIGC can enhance creativity and efficiency while reshaping artistic expressions in animation.*

Practical relevance. *The findings provide critical knowledge for animation studios, filmmakers, and technologists exploring how to incorporate AIGC into their*

creative works effectively. The paper underscores the potential for AIGC to significantly reduce production costs, enhance creative possibilities, and extend the life-cycle of classic animated works, making it an indispensable tool in the evolving landscape of animation.

Keywords: AIGC, animation design, human-AI collaboration, animation production workflow, animation quality restoration.

INTRODUCTION

With the rapid development of artificial intelligence (AI) technologies, AI-Generated Content (AIGC), as a key branch, is swiftly transforming the ecosystem across various creative fields. Leveraging large-scale pre-trained models and deep learning algorithms, AIGC not only efficiently generates multimodal content such as text, images, audio, and video but also emulates and even surpasses human creators' styles and techniques, exhibiting remarkable creative potential. AIGC's applications have gradually permeated various creative industries, with its influence on animation creation becoming increasingly profound.

As a representative cultural and creative industry, animation is steadily becoming an essential platform for the practice and innovation of AIGC technologies. These technologies have not only brought innovation to areas such as image and video generation and editing but have also driven continuous innovation in animation creation, including scene construction, the creation of virtual characters, and 3D motion generation. Through automated and personalized content creation, AIGC provides new possibilities for the animation industry, making the creative process more efficient, flexible, and imaginative and further promoting the deep integration of animation creation with technological advancements.

ANALYSIS OF RECENT RESEARCH

Numerous scholars have conducted in-depth studies on the involvement of AIGC in animation creation, covering various aspects from theoretical analysis to practical applications. Kurt D. E. reflected on the dynamic relationships between art, artists, and audiences, constructing a theoretical framework for AI-generated artwork [9]. His study emphasized that AI is not merely a tool for assisting artistic creation but an invaluable assistant with unique creative capabilities, offering new perspectives and possibilities for artistic creation.

Liu Q. and Peng H. explored the role of AI in enhancing the efficiency of animation creation, highlighting that despite the powerful technical advantages of AI, the core of animation

creation remains human-centric [11]. Animators should base their designs on human nature to ensure that the resulting works can resonate emotionally with audiences, thus preserving the humanistic warmth of artistic expression.

The Disney Research Institute led a study on the application of AI across different stages of animation creation, including script generation, image-based 3D character creation, and the use of algorithms to optimize special effects and post-production. Zhang Y. et al. successfully developed natural language processing software that transforms complex scripts into simple sentence structures, subsequently converting these scripts into coherent animated works using animation system algorithms [19]. This achievement provided a new technological pathway for script generation in animation creation.

Taylor S. et al. introduced a simple yet effective deep learning method to automatically generate natural speech animations, ensuring synchronization with input voice [17]. This approach yielded positive results in animation displays with various characters and voices. It enabled the real-time generation of on-demand voice animations from user input, significantly enriching the expressiveness and interactivity of animations.

Some scholars have focused on popular AIGC software, employing comparative analysis to examine their strengths and weaknesses in different fields. Chen S. et al. proposed the PANic-3D system, which can directly reconstruct stylized 3D character models from illustrations, using non-photorealistic contour lines for coloring, providing an innovative technical solution for character modeling and improving the efficiency and quality of character design [4]. Reddy V. S. et al. explored new methods for creating visual effects in dynamic images, utilizing convolutional neural networks to analyze the visual effects in the Hollywood animated film «Coco» [15].

Borji A. conducted a precise quantitative comparison of the text-to-image face generation capabilities of three software tools: Stable Diffusion, Midjourney, and DALL-E 2 [3]. The study found that Stable Diffusion outperformed the other two tools in generating realistic human

faces, while Midjourney's faces exhibited a more surreal and cartoon-like style, providing valuable insights for animation creators when selecting appropriate image-generation software. These studies demonstrate that AIGC plays a positive role in animation creation.

PURPOSE

Current research primarily focuses on the practical application of AI technologies in animation creation, exploring various aspects such as the technology itself, software tools, and technological applications. The above studies highlight that the involvement of AIGC in animation creation is an unstoppable trend. However, there is still a lack of comprehensive research on the profound impacts of AIGC on animation creation, especially its effects on traditional creative processes and artistic expression. Therefore, this paper aims to analyze the practical applications of AIGC in animation creation, examine the challenges and transformations it presents to traditional animation creation methods, and explore the future development directions of AIGC technologies in the field of animation.

THE RESULTS OF THE RESEARCH AND THEIR DISCUSSION

Changing the Animation Creation Model. In today's world, AI technologies have profoundly and significantly impacted visual arts, industries, culture, and media. Traditional artistic production methods typically rely on extensive manual creation, operating under a collaborative human effort model. In the AI era, AIGC, by automating content generation, has greatly enhanced creative efficiency, shifting the model from human collaboration to human-AI collaboration [5].

In the human-AI collaborative creation model, creators only need to set specific content and issue learning instructions to the AI until the generated content meets their expectations. In this process, creators are responsible for thoughtful task design, while AI focuses on completing the task. By collaborating with AIGC, creators can focus more on creativity and artistic expression, thus enhancing the creativity and expressiveness of the work.

A landmark animation work in this context is «The Dog & The Boy». This piece, the world's first AI-assisted animated short film, was jointly produced and released by Netflix, Microsoft's Rinna, and Japan's WIT Studio in early 2023. The animation tells the story of a boy reunited with a robotic dog. The production adopted a blend of traditional animation

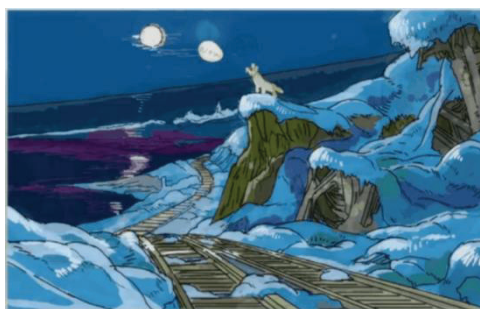
techniques and AIGC technology, where AI assisted in the creation of scene designs and background music, while the story script and character designs still relied on traditional writing and manual creation. Notably, AI was used in the creation of background art through a custom system known as Primitive AI. In this collaborative background creation process, animators first created simple scene sketches, which were then refined by AI-generated images, followed by multiple iterations and adjustments by animators until they met the required standards as shown in Fig. 1. Although this work has received some negative criticism on the Internet, it proves that the human-machine collaboration creation method of animation is gradually becoming a trend [2].

The film's director, Makihara Ryoutarou, endorsed the human-AI collaborative creation model in interviews. Creators view AIGC as a powerful assistant, allowing them to focus solely on deepening creativity and expressing individuality, thus expanding their creative space and freedom. This human-AI collaboration approach is gradually becoming a mainstream trend in the animation industry.

Disrupting Traditional Animation Creation Processes. Animation creation has always been a collaborative process, and traditional animation creation workflows can be divided into three stages (Fig. 2): pre-production, production, and post-production [1]. Pre-production involves key stages such as concept creation, material collection, script-writing, animation style setting, character design, scene design, prop design, and storyboard creation. The mid-production phase focuses on the creation of animation movement laws, and for 2D animation, it includes line art and coloring [14], while for 3D animation, it involves character and scene modeling and rigging [6]. The post-production phase includes editing, sound effects, special effects, compositing, and rendering. Traditional animation workflows are time-consuming, labor-intensive, and often require considerable human effort [8].

The introduction of AIGC has disrupted these traditional processes, replacing them with a more efficient and flexible fully automated workflow involving text-to-image, image-to-video, video-to-audio as shown in Figure 3.

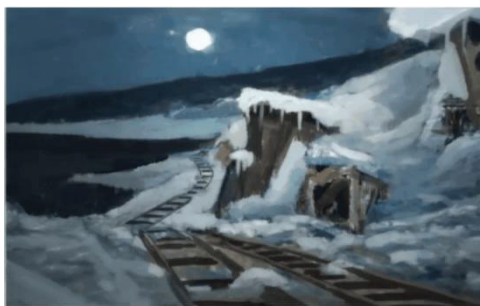
In the script creation phase, creators can use text-based AIGC tools to gain inspiration and outline the plot, quickly generating a story framework and refining the script [12]. During character and scene design, image-generation tools automatically generate character designs and background images based



Step 1: Layout



Step 2: AI Generation



Step 3: AI Generation



Step 4: Final BG

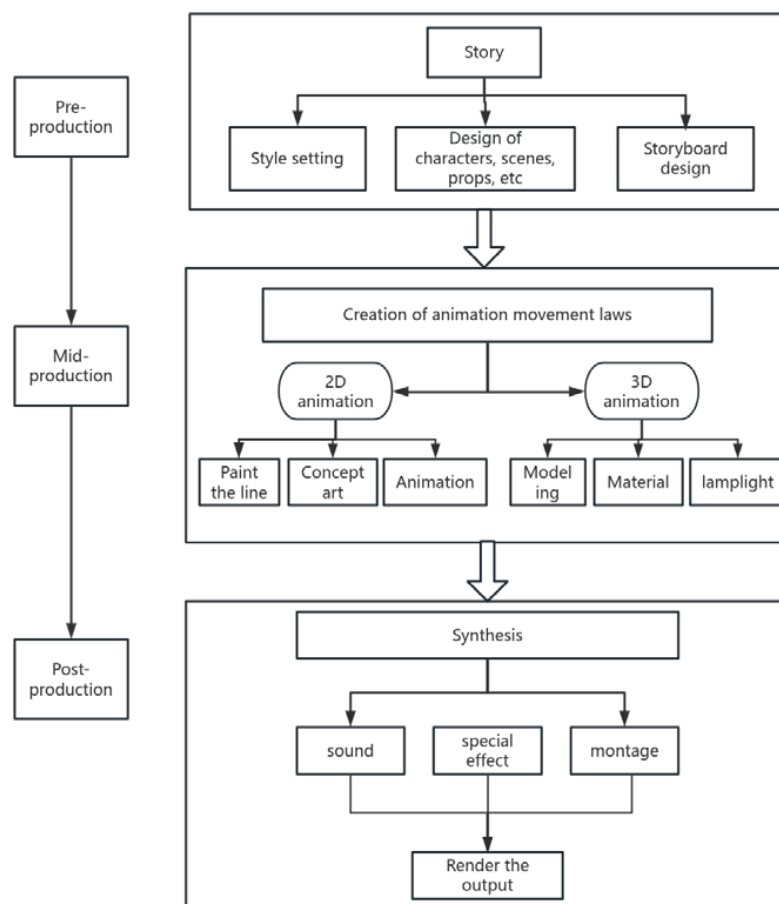
Fig. 1. Scene Design from *The Dog & The Boy*, Netflix, 2023

Fig. 2. Traditional Animation Creation Workflow (scheme of authors)

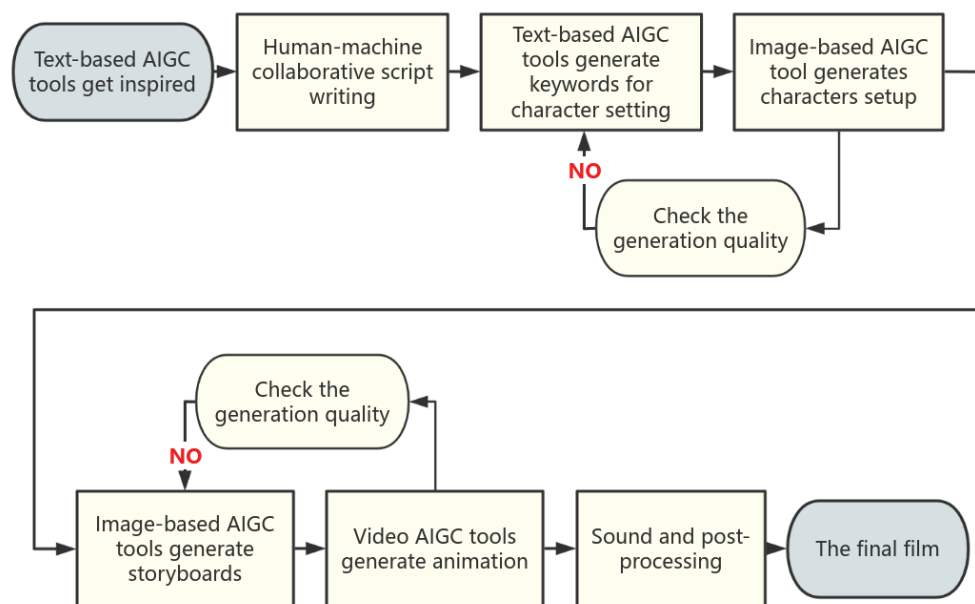


Fig. 3. Animation Creation Workflow with Full AIGC Involvement (scheme of authors)

on textual descriptions [18], reducing time spent on hand-drawing and design. Text-based and image-based AIGC tools can work in tandem to generate animated storyboard frames. By using text generation tools to convert the script into a textual storyboard, followed by image generation tools and manual adjustments, the final storyboard frames are created.

In video and audio generation, AIGC tools such as Runway for video generation and Stable Audio for sound generation are used [7]. In animation video generation, with Runway, creators can input images into an online platform, add minimal textual descriptions, set camera movements, and through several iterations, obtain the final video frame. In sound design, AIGC-generated audio clips lack emotional nuance, and traditional animation audio creation methods are still more suitable for the actual creation process.

It is important to note that the text-to-image or image-to-video process is iterative, requiring creators to continuously intervene and fine-tune the AIGC tools to produce the desired visuals or videos. If the images or videos are subpar, further adjustments and iterations are necessary.

Restoring Classic Animated Works.

In the field of image restoration and enhancement, AIGC demonstrates unique advantages with its powerful data processing and learning capabilities, breathing new life into classic animated works [10]. Many classic animated films, due to their age, have suffered deterioration of

their preservation media (such as film reels), resulting in reduced image quality and negatively impacting the viewing experience and the artistic and cultural value of the works. AIGC technologies, by deep learning from extensive image data, can accurately identify and repair these image issues [13].

The Shanghai Animation Film Studio, a cradle of Chinese traditional animation, has created many renowned animated works. However, many of these classics were preserved on film, which has deteriorated over time, severely impacting their artistic effects and visual appeal. In early 2022, local companies Xigua Video and Volcano Engine launched the «4K Video Restoration Project», using AIGC technology to restore the 1961 classic animation «Havoc in Heaven» to 4K, as shown in Figure 4.

In this process, the AIGC system scans and analyzes each frame of the film, using pre-learned image features and patterns to intelligently remove noise, making the images clearer and smoother. For blurry or scratched sections, the algorithm enhances and sharpens the edges and details, intelligently filling in and repairing the image based on surrounding visual information. Regarding color distortion, AIGC accurately restores and optimizes the colors based on the animation's style and references from other materials, revitalizing the vivid color appeal of the visuals. By the end of 2022, Xigua Video and Volcano Engine had completed the 4K restoration of over a hundred Chinese classic animations, rejuvenating works that have endured for over 60 years.



Fig. 4. Havoc in Heaven 1961 Version vs. 4K Restored Version, China, 1961, 2022

CONCLUSIONS

With the continuous advancement of AIGC technology, the animation creation industry is undergoing unprecedented transformation. Animation production companies and institutions are adopting AIGC technologies enthusiastically and gradually incorporating them into existing workflows, exploring new models for AIGC + animation creation, opening new chapters in animation development. Although AIGC still faces limitations in understanding human emotions, creative depth, and subtlety, and its stability and reliability require further improvement, its powerful generative capabilities and efficient workflows have already made it an integral part of the animation industry. In the future, as technology evolves and improves, AIGC is expected to play an even more significant role in animation creation, propelling the industry to new heights and generating more exceptional animated works to meet the growing cultural demands and aesthetic expectations of audiences.

BIBLIOGRAPHY

- [1] Aziz W. M. B. W. A. The efficiency issues on the animation production stages. Doctoral dissertation, Universiti Malaysia Kelantan. 2017.
- [2] Berg E. V. D. Magical Paintbrush, Human Fetus or Black Box: Algorithmic Imaginaries about AI-art in YouTube Discourse. Master's thesis, Utrecht University. 2024.
- [3] Borji A. Generated faces in the wild: Quantitative comparison of stable diffusion, midjourney and DALL-E 2. 2022. DOI:10.48550/arXiv.2210.00586
- [4] Chen S., Zhang K., Shi Y., Wang H., Zhu Y., Song G., An S., Kristjansson J., Yang X., Zwicker M. Panic-3d: Stylized single-view 3d reconstruction from portraits of anime characters. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*. 2023. P. 21068-21077.
- [5] Fui-Hoon Nah F., Zheng R., Cai J., Siau K., Chen L. Generative AI and ChatGPT: Applications, challenges, and AI-human collaboration. *Journal of Information Technology Case and Application Research*. 2023. Vol. 25. №3. P. 277-304. DOI:10.1080/15228053.2023.2233814
- [6] Gouvatsos A. 3D storyboarding for modern animation. Doctoral dissertation, Bournemouth University. 2018.
- [7] Gu R., Li H., Su C., Wu W. Innovative digital storytelling with AIGC: Exploration and discussion of recent advances. 2023. <https://doi.org/10.48550/arXiv.2309.14329>
- [8] Izani M., Razak A., Rehad D., Rosli M. The Impact of Artificial Intelligence on Animation Filmmaking: Tools, Trends, and Future Implications. In *2024 International Visualization, Informatics and Technology Conference (IVIT)*. IEEE. 2024. P. 57-62. DOI: 10.1109/IVIT62102.2024.10692804
- [9] Kurt D. E. Artistic creativity in artificial intelligence. Master diss., Radbound University. 2018.
- [10] Li X., Ren Y., Jin X., Lan C., Wang X., Zeng W., Chen Z. Diffusion Models for Image Restoration and

Enhancement--A Comprehensive Survey. 2023. <https://doi.org/10.48550/arXiv.2308.09388>

[11] Liu Q., Peng H. Influence of Artificial Intelligence Technology on Animation Creation. *Journal of Physics: Conference Series*. 2021. Vol. 1881. №3. P. 032076. DOI:10.1088/1742-6596/1881/3/032076

[12] Liu Z., Li Y., Cao Q., Chen J., Yang T., Wu Z., Liu T. Transformation vs tradition: Artificial general intelligence (agi) for arts and humanities. 2023. <https://doi.org/10.48550/arXiv.2310.19626>

[13] Ma X., Huo Y. Drawing a satisfying picture: An exploratory study of human-AI interaction in AI Painting through breakdown-repair communication strategies. *Information Processing & Management*. 2024. Vol. 61. №4. P. 103755. <https://doi.org/10.1016/j.ipm.2024.103755>

[14] Moreno L. The creation process of 2D animated movies. *Diakses pada*. 2014.

[15] Reddy V. S., Kathiravan M., Reddy V. L. Revolutionizing animation: unleashing the power of artificial intelligence for cutting-edge visual effects in films. *Soft Computing*. 2024. Vol. 28. №1. P. 749-763. <https://doi.org/10.1007/s00500-023-09448-3>

[16] Sharma H., Juyal A., Das M. Future of animation with artificial intelligence. In *International Conference on Emerging Trends in Design & Arts*. 2023. Vol. 4. №2SE. P. 180-187. DOI:10.29121/shodhkosh.v4.i2SE.2023.559

[17] Taylor S., Kim T., Yue Y., Mahler M., Krahe J., Rodriguez A. G., Hodgins J. Matthews I. A deep learning approach for generalized speech animation. *ACM Transactions On Graphics (TOG)*. 2017. Vol. 36. №4. P. 1-11. <https://doi.org/10.1145/3072959.3073699>

[18] Xi C., Chung J. A Study on Character Design Using [Midjourney] Application. *International Journal of Advanced Culture Technology*. 2023. Vol. 11. №2. P. 409-414. <https://doi.org/10.17703/IJACT.2023.11.2.409>

[19] Zhang Y., Tsipidi E., Schriber S., Kapadia M., Gross M., Modi A. Generating animations from screenplays. 2019. <https://doi.org/10.48550/arXiv.1904.05440>

REFERENCES

[1] Aziz, W. M. B. W. A. (2017). *The efficiency issues on the animation production stages* (Doctoral dissertation, Universiti Malaysia Kelantan). [in English]

[2] Berg, E. V. D. (2024). *Magical Paintbrush, Human Foetus or Black Box: Algorithmic Imaginaries about AI-art in YouTube Discourse* (Master's thesis). [in English]

[3] Borji, A. (2022). Generated faces in the wild: Quantitative comparison of stable diffusion, midjourney and dall-e 2. *arXiv preprint arXiv:2210.00586*. DOI:10.48550/arXiv.2210.00586 [in English]

[4] Chen, S., Zhang, K., Shi, Y., Wang, H., Zhu, Y., Song, G., ... & Zwicker, M. (2023). Panic-3d: Stylized single-view 3d reconstruction from portraits of anime characters. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition* (pp. 21068-21077). [in English]

[5] Fui-Hoon Nah, F., Zheng, R., Cai, J., Siau, K., & Chen, L. (2023). Generative AI and ChatGPT: Applications, challenges, and AI-human collaboration. *Journal of Information Technology Case and Application Research*, 25(3), 277-304. DOI:10.1080/15228053.2023.2233814 [in English]

[6] Gouvatsos, A. (2018). *3D storyboarding for modern animation* (Doctoral dissertation, Bournemouth University). [in English]

[7] Gu, R., Li, H., Su, C., & Wu, W. (2023). Innovative digital storytelling with AIGC: Exploration and discussion of recent advances. *arXiv preprint arXiv:2309.14329*. <https://doi.org/10.48550/arXiv.2309.14329> [in English]

[8] Izani, M., Razak, A., Rehad, D., & Rosli, M. (2024, August). The Impact of Artificial Intelligence on Animation Filmmaking: Tools, Trends, and Future Implications. In *2024 International Visualization, Informatics and Technology Conference (IVIT)* (pp. 57-62). IEEE. DOI: 10.1109/IVIT62102.2024.10692804 [in English]

[9] Kurt, D. E. (2018). Artistic creativity in artificial intelligence. *Master diss., Radboud University*. [in English]

[10] Li, X., Ren, Y., Jin, X., Lan, C., Wang, X., Zeng, W., ... & Chen, Z. (2023). Diffusion Models for Image Restoration and Enhancement--A Comprehensive Survey. <https://doi.org/10.48550/arXiv.2308.09388> [in English]

[11] Liu, Q., & Peng, H. (2021). Influence of Artificial Intelligence Technology on Animation Creation. *Journal of Physics: Conference Series*. Vol. 1881, №3, p. 032076. IOP Publishing. DOI:10.1088/1742-6596/1881/3/032076 [in English]

[12] Liu, Z., Li, Y., Cao, Q., Chen, J., Yang, T., Wu, Z., ... & Liu, T. (2023). Transformation vs tradition: Artificial general intelligence (agi) for arts and humanities. <https://doi.org/10.48550/arXiv.2310.19626> [in English]

[13] Ma, X., & Huo, Y. (2024). Drawing a satisfying picture: An exploratory study of human-AI interaction in AI Painting through breakdown-repair communication strategies. *Information Processing & Management*, 61(4), 103755. <https://doi.org/10.1016/j.ipm.2024.103755> [in English]

[14] Moreno, L. (2014). The creation process of 2D animated movies. *Diakses pada*, 10. [in English]

[15] Reddy, V. S., Kathiravan, M., & Reddy, V. L. (2024). Revolutionizing animation: unleashing the power of artificial intelligence for cutting-edge visual effects in films. *Soft Computing*, 28(1), 749-763. <https://doi.org/10.1007/s00500-023-09448-3> [in English]

[16] Sharma, H., Juyal, A., & Das, M. (2023, July). Future of Animation with Artificial Intelligence. *International Conference on Emerging Trends in Design & Arts*. Vol. 4, №2SE, pp. 180-187. DOI:10.29121/shodhkosh.v4.i2SE.2023.559 [in English]

[17] Taylor, S., Kim, T., Yue, Y., Mahler, M., Krahe, J., Rodriguez, A. G., ... & Matthews, I. (2017). A deep learning approach for generalized speech animation. *ACM Transactions on Graphics (TOG)*, 36(4), 1-11. <https://doi.org/10.1145/3072959.3073699> [in English]

[18] Xi, C., & Chung, J. (2023). A Study on Character Design Using [Midjourney] Application. *International Journal of Advanced Culture Technology*, 11(2), 409-414. <https://doi.org/10.17703/IJACT.2023.11.2.409> [in English]

[19] Zhang, Y., Tsipidi, E., Schriber, S., Kapadia, M., Gross, M., & Modi, A. (2019). Generating animations from screenplays. <https://doi.org/10.48550/arXiv.1904.05440> [in English]

АНОТАЦІЯ

Чень Лінцюн, Хиневич Р. Застосування та вплив контенту, згенерованого штучним інтелектом, на створення анімації

Мета дослідження – вивчити застосування та вплив контенту, створеного штучним інтелектом, на розробку анімації, зосередившись на тому, як штучний інтелект (ШІ) трансформує традиційні процеси створення анімації, кидає виклик усталеним художнім робочим процесам та виконує роботу по відновленню якості анімації.

Методологія. У статті всебічно розглянуто останні результати досліджень технології AIGC в анімації, використовуючи аналіз літератури. Результати дослідження демонструються через аналіз конкретних прикладів, що ілюструють практичне застосування технології AIGC у створенні анімації та її технологічні досягнення.

Результати. AIGC суттєво трансформував модель створення анімації, перейшовши від традиційного підходу до співпраці між людьми до більш ефективної моделі співпраці між людиною та ШІ. У цій новій парадигмі творці можуть надавати ШІ конкретний контент і навчальні інструкції, що дозволяє йому генерувати контент, який відповідає баченню творця. Така співпраця підвищує ефективність творчого процесу, дозволяючи авторам більше зосередитися на художньому вираженні та творчості. Традиційно створення анімації було трудомістким процесом, що вимагав значних витрат часу та людських ресурсів. Інструменти AIGC тепер автоматизують робочі процеси, пов'язані з перетворення тексту в зображення, зображення у відео та відео в аудіо. Однак, хоча інструменти AIGC чудово справляються зі створенням зображень і відео, аудіодизайн все ще покладається на традиційні методи через емоційну та нюансовану природу створення звуку. Крім того, AIGC виявляється безцінним у відновленні класичних анімаційних фільмів. Завдяки своїм потужним можливостям обробки зображень, AIGC може відновлювати пошкоджені кадри, покращувати якість зображення та відновлювати точність передачі кольору. Ця здатність відроджувати та покращувати класичні твори підкреслює потенціал AIGC у збереженні історії анімації, водночас покращуючи глядацький досвід.

Наукова новизна. У статті висвітлюється новаторське використання AIGC у трансформації традиційних методів виробництва анімації, інтегруючи передові методи штучного інтелекту на всіх етапах створення. Запропоновано нове розуміння того, як AIGC може підвищити креативність та ефективність, одночасно змінюючи художні засоби вираження в анімації.

Практична значущість. Результати дослідження надають важливі знання анімаційним студіям, режисерам і технологам, які досліджують як ефективно впроваджувати AIGC у свою творчість. Підкреслено потенціал AIGC для значного зниження виробничих витрат, розширення творчих можливостей і подовження життєвого циклу класичних анімаційних творів, що робить його незамінним інструментом в анімації, що розвивається.

Ключові слова: AIGC, анімаційний дизайн, співпраця між людиною та ШІ, робочий процес виробництва анімації, відновлення якості анімації.

АВТОРСЬКА ДОВІДКА:

Чень Лінцюн, аспірантка кафедри мультимедійного дизайну, Київський національний університет технологій та дизайну, Київ, Україна, e-mail: 2210ZW001@sust.edu.com, orcid: 0009-0005-4035-2435.

Хиневич Руслана, кандидат технічних наук, доцент кафедри мультимедійного дизайну, Київський національний університет технологій та дизайну, Київ, Україна, e-mail: h.ruslana.v@gmail.com, orcid: 0000-0002-3130-5785.

Стаття подана до редакції 06.01.2025 р.