Research on the Application of AIGC Technology in Digital Arts Education in Colleges and Universities

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Abstract: With the rapid development of computer technology, digital arts have transformed from traditional modes towards intelligence and automation. The rise of AIGC (Artificial Intelligence Generated Content) technology has provided new tools and platforms for digital arts education, significantly altering teaching models and talent cultivation strategies. This study aims to explore how colleges and universities can adapt to the development trends of AIGC technology to cultivate digital arts talents suitable for the new era. Through diversified research methods such as literature review, case analysis, interviews, and questionnaires, this study deeply analyzes application instances of AIGC technology in digital arts education, revealing its teaching effects and influences. It provides strategic suggestions for constructing a digital arts curriculum system and teaching model oriented towards future industries.

Keywords: AIGC Technology; Digital Arts Education; Colleges and Universities; Teaching Model; Talent Cultivation

1. Introduction

The Chinese government has placed high importance on the integrated development of art and technology, actively promoting the education and dissemination of emerging art forms such as digital art (Xu, 2025). The methods of creation and expression in digital art have evolved from traditional digital techniques to intelligent and automated approaches. AIGC, or Artificial Intelligence Generated Content, highlights the crucial role of artificial intelligence in content creation. This technology enables computers to simulate human creative processes, leveraging advanced methods such as deep learning and natural language processing to autonomously generate works of artistic value. It encompasses several critical technological breakthroughs (Liu et al., 2024). The integration of AIGC not only revolutionizes the paradigm of artistic creation but also brings unprecedented opportunities and challenges to the field of art education.

The core objective of this study is to explore how higher education institutions can respond to the development trends of AIGC technology, with the mission of cultivating digital art talents who are well-adapted to the new era. The advancement of AIGC offers new tools and platforms for digital art education, significantly transforming teaching models and talent development strategies (Li et al., 2023). By conducting an in-depth analysis of application cases of AIGC in digital art education, this research aims to reveal how to effectively leverage the technology to enhance instructional outcomes and stimulate students′ creative potential. Furthermore, the study seeks to provide strategic recommendations for higher education institutions to construct curriculum systems and teaching models aligned with future industry demands in digital art, thereby meeting the evolving needs for talent in the digital art sector.

This research adopts a diversified methodological framework, including literature review, case study, interviews, and questionnaire surveys. The literature review is employed to outline the current state of AIGC application both domestically and internationally, as well as educational research trends. The case study focuses on

animation majors to examine specific applications of AIGC in art education practices. Interviews and questionnaires are used to collect broad feedback from faculty and students across relevant institutions regarding their awareness and acceptance of AIGC technology, assessing its practical impact in educational settings. Through these methods, the study strives to comprehensively understand the current applications of AIGC in digital art education and its profound influence on pedagogical models and talent cultivation. During the implementation process, extensive quantitative and qualitative data were collected via questionnaires and interviews, which were then systematically coded and statistically analyzed. The resulting charts and in-depth analyses provide a robust empirical foundation for this study. Ultimately, the research findings are presented through visual charts, clearly demonstrating the effectiveness and impact of AIGC applications in the field of education.

2. Fundamental Concepts of AIGC and the Needs of Digital Art Education

The integration of AIGC technology into the realm of digital art education signifies a disruptive transformation (Bai & Guo, 2024). Empowered by cutting-edge technologies such as machine learning, deep learning, and natural language processing, AIGC enables computers to simulate human creative processes and autonomously generate artworks with artistic appeal. The emergence of this technology has not only opened new avenues for digital art creation but also posed novel challenges to educational systems and talent cultivation standards. Traditionally, digital art education has emphasized the enhancement of students' practical skills, encompassing areas such as painting, sculpture, and game design (Ma, 2023). However, with the rapid development of AIGC, educational models are entering a new stage of intelligent and automated transformation (Qiu & Wu, 2024). The application of AIGC significantly enhances the efficiency and diversity of creative tools, while also demanding that students acquire a foundational understanding of relevant technologies and cultivate innovative thinking. Consequently, the goal of

digital art education in higher education institutions has evolved from a narrow focus on skill training to a balanced emphasis on intelligent creation and technological application, aiming to nurture interdisciplinary talents aligned with future industrial demands.

2.1 Selection and Use of AI Tools

Within the scope of digital art education, students′ proficiency in applying AIGC tools holds critical importance (Huang & Yang, 2024). This includes a deep understanding and skilled operation of AI drawing tools such as Stable Diffusion, which can automatically generate images based on concise textual prompts and support features like image enhancement and style transfer. In addition, students are expected to master AI animation creation tools, which, through advanced algorithms, can swiftly construct complex background settings and character movements—greatly improving both the efficiency and quality of animation production. For instance, in the process of creating AI-generated short films, AIGC technology not only expands the boundaries of creativity and assists in scriptwriting but also directly generates visual and audio materials. As illustrated in Figure 1, the technology′s potential in practical application is vividly demonstrated.

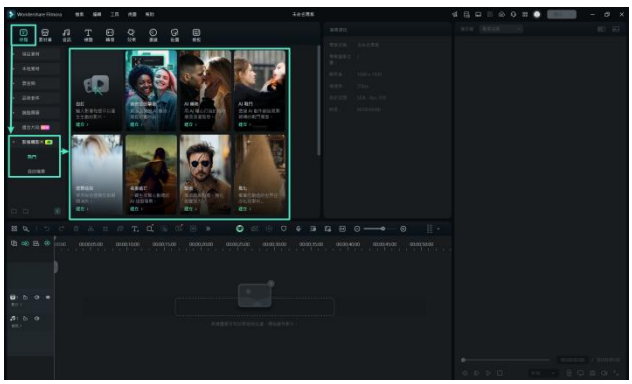

Figure 1 AI Sketch Generation Function in Filmora Software

2.2 Training and Optimization of Creative Expression

AIGC technology opens up a new frontier for students to express creativity, enabling them to realize their conceptual ideas with the assistance of artificial intelligence, and to integrate these technologies into artistic creation in innovative ways. This

significantly enhances the flexibility and diversity of artistic expression, as illustrated in Figure 2. In the realm of animation planning and production, AI technologies not only provide robust technical support but also facilitate a deep integration with artistic expression, giving rise to distinctive artistic styles. Students can use AI tools to explore a wide variety of artistic genres and modes of expression. For instance, AI technology can be employed to replicate traditional painting techniques, seamlessly merging classical aesthetics with the power of modern technology.One notable example is GauGAN, an innovative software developed by NVIDIA and named after the renowned French Impressionist painter Paul Gauguin. According to NVIDIA, the software's capabilities in generating highly realistic images may even surpass Gauguin's artistic achievements. The core function of GauGAN lies in its ability to generate standardized images based on semantic layouts and adapt them spatially, as demonstrated in Figure 2.

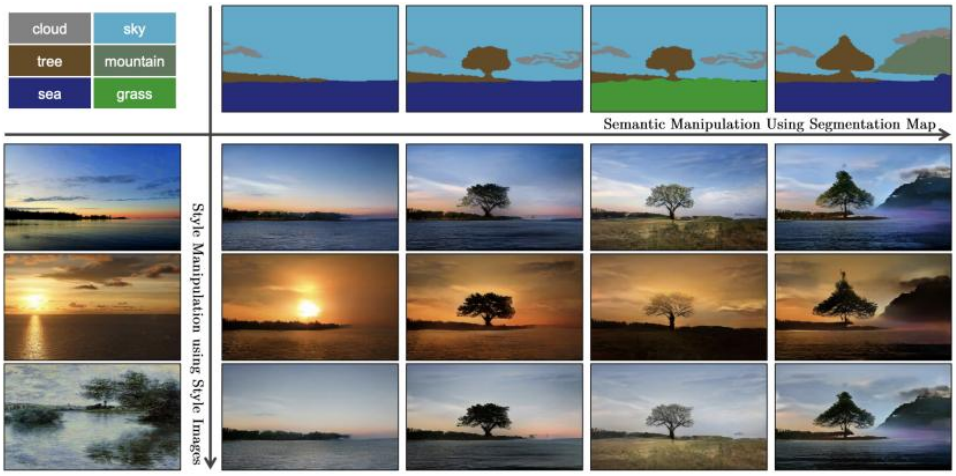

Figure 2 Demonstration of Sketch-to-Image Conversion in NVIDIA GauGAN Software

2.3 Instruction and Implementation of Technical Foundations

To effectively utilize AIGC technologies, students must develop a solid understanding of the underlying algorithmic principles, particularly within the domains of machine learning and deep learning. This includes familiarity with various learning models employed in AIGC, such as supervised learning, unsupervised learning,

semi-supervised learning, and reinforcement learning, as well as key technologies in computer vision and natural language processing. A thorough grasp of these technical foundations empowers students to manipulate and optimize AIGC tools more effectively, thereby enhancing both the technical sophistication and creative depth of their work.Taking animation as an example, traditional animation production typically involves multiple labor-intensive stages such as character design, background drawing, and animation rendering—each of which demands considerable time and effort. The introduction of AIGC tools can significantly boost production efficiency. For instance, advanced AI algorithms can rapidly generate complex backgrounds or automate character motion effects, as shown in Figure 3. These tools not only save time and resources but also expand the creative possibilities available to artists.In the animation field, the integration of artificial intelligence enables creators to pursue technological innovation while also conveying rich humanistic and artistic values. Research shows that students majoring in animation generally hold a positive attitude toward AIGC technology, recognizing its potential to enhance production efficiency and inspire boundless creativity (Mei & Yuan, 2024). Moreover, instructors have acknowledged AIGC's value as a teaching aid, helping students gain a more comprehensive and in-depth understanding of the various stages of animation production (Tang, 2024). The application of this technology not only stimulates students′ enthusiasm for creation but also offers educators novel pedagogical strategies and assessment tools.

Figure 3 AI-Generated Game Features and Scene Effects

3. Evaluation of the Application Effectiveness of AIGC in Digital Art Education

The evaluation of teaching effectiveness serves as a crucial metric for assessing the success of AIGC (Artificial Intelligence Generated Content) technology in digital art education. By employing quantitative and qualitative methods such as surveys, in-depth interviews, and project analysis, it is possible to comprehensively assess learning outcomes (Hua Jingfei, 2024). The core dimensions of this evaluation include students' learning interest, creative expression ability, and technical proficiency. These assessment outcomes provide empirical evidence for the actual effectiveness of AIGC in educational settings and inform further optimization of pedagogical practices. This study utilized questionnaire surveys to collect data on the application outcomes of AIGC in digital art education. Overview of Participants: The survey targeted 120 in-service art course instructors from various regions and universities, each with diverse teaching experiences and professional backgrounds, to ensure the representativeness and generalizability of the findings. All respondents had at least two years of practical teaching experience in art education, ensuring a deep understanding and substantial practical engagement with AIGC in teaching contexts. Survey Process: The questionnaire was designed by senior educational research experts and comprehensively covered multiple dimensions of AIGC applications in art education, including course design, creative practice, and project presentation. - Pilot Phase: A small-scale pilot was conducted to test the reliability and validity of the questionnaire. Revisions were made based on feedback. - Formal Implementation: The finalized questionnaire was distributed via email and online platforms to the target group of instructors. - Data Collection and Processing: Completed responses were collected, input into a database, and systematically organized. - Data Analysis: Statistical software was used for in-depth analysis, including frequency statistics and cross-tabulations. - Result Interpretation: Based on the analysis, a comprehensive

report was written to interpret the findings and present educators' feedback on the effectiveness of AIGC integration. As shown in Table 1, the majority of instructors expressed positive views on the application of AIGC in the construction and delivery of university art courses. Regarding teaching effectiveness, instructors highly rated AIGC's ability to stimulate emotional engagement and support personalized learning. Specifically, 83.3% strongly agreed that AIGC technologies effectively enhanced emotional engagement in the evaluation process, while 85.8% strongly agreed that these tools significantly improved the personalized experience in teaching. AIGC also demonstrated outstanding performance in the generation of teaching resources, with 95% of teachers highly recognizing its capacity to improve both the diversity and customization of instructional materials. However, in areas such as diagnosis, motivation, guidance, and intervention, although 90% of respondents acknowledged the potential of AIGC, some held neutral or opposing views—suggesting that further exploration and refinement are needed for broader application in these domains. It is also worth noting that student feedback on AIGC courses remains an essential component of the overall evaluation. Although virtual reality applications received slightly lower recognition, 75% of educators still strongly endorsed their potential to enhance student immersion and creativity. These findings indicate that the application of AIGC in art education has garnered wide acceptance among instructors and demonstrates its unique value and promising prospects.

Table 1: Effectiveness of AIGC Technology in the Construction and Teaching Practices of University Art Courses (n=120)

Evaluation Content	Application Description	AICG Exposure	5	4	3	2	1	Percentage (%)
Emotional Engagement	AIGC assessment content is more emotionally positive.	90%	100	10	5	3	2	83.3
Diagnosis, Motivation, Guidance, and Intervention	Suitable for providing diagnosis and guidance in academic assessments.	85%	108	8	2	1	1	90
Personalized	AIGC provides	92%	103	17	3	2	0	85.5

Evaluation Content	Application Description	AICG Exposure	5	4	3	2	1	Percentage (%)
Learning	personalized teaching for art education to improve learning experience and understanding.							
Interactivity	AIGC technology enhances teacher-student interaction, engagement, and learning interest.	90%	98	22	0	0	0	81.7
Teaching Resource Generation	AIGC technology can automatically generate multi-modal digital resources based on teacher needs.	95%	114	6	0	0	0	95
Virtual Assistant	AIGC as humanoid robots and virtual digital humans assist and facilitate learners' art creation.	75%	90	30	0	0	0	75

Note: 5, 4, 3, 2, and 1 correspond to "Strongly Agree," "Agree," "Neutral," "Disagree," and "Strongly Disagree" on the Likert scale, respectively.

Through gathering feedback from students, we can gain a deeper understanding of their views and experiences with using AIGC technology, as well as the challenges and difficulties they encounter during the learning process. This feedback is of significant value in optimizing teaching content and strategies, as shown in **Table 2**. Additionally, an analysis of the demand for AIGC skills in the job market is also a key component of the evaluation. With the continuous advancement of AIGC technology, the demand for talent with AIGC skills in the job market is increasing. By conducting an in-depth analysis of the job market demand, we can clarify how students' competitive advantages in employment are improving and provide guidance for universities to cultivate talents that align with market needs.

Table 2: Application of AIGC Technology in Teaching Effectiveness Evaluation (n=120)

Application Section	Description	Exposure to AIGC	5	4	3	2	1	Percentage %
Scheme Design	Using AIGC technology to generate basic sketch templates and color schemes	95%	100	5	2	1	2	91.7
Creative Practice	Students use AIGC for real-time creation to improve drawing efficiency	90%	95	15	8	1	1	79.2
Learning Evaluation	Intelligent evaluation systems provide specific scores and improvement suggestions	85%	90	15	10	5	0	75
Personalized Learning	AIGC technology tailors and provides personalized learning based on student needs	92%	105	15	0	0	0	87.5
Interactive Learning	AIGC technology creates a virtual learning environment to facilitate interaction and discussion between students and teachers	88%	95	25	0	0	0	79.2
Virtual Reality Application	Students create in a digital virtual environment using virtual reality technology	70%	85	35	0	0	0	70.8

Note: 5, 4, 3, 2, 1 represent the Likert scale categories of Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree, respectively.

4. Analysis of the Talent Cultivation Model Driven by Artificial Intelligence Generated Content (AIGC) in Higher Education

4.1 Positioning of the Talent Cultivation Model

In the wave of digitalization, the digital arts industry is undergoing an unprecedented and profound transformation (Chen Wen, 2024). Technological advancements and diversified market demands go hand in hand, driving a continuous increase in the demand for digital art talents, exhibiting distinct characteristics such as multi-layered and composite qualities (Sun Zhengnan, 2024). In response to this trend, higher education institutions, as the core venues for talent cultivation, are faced with the significant challenge of adapting to and cultivating digital art talents that meet the requirements of the times. Therefore, universities need to carefully design and implement talent cultivation programs that align with different levels of talent demand.The primary task of higher education institutions is to ensure that students master the foundational theories and operational skills of AIGC tools to meet the industry's need for practical talents who can proficiently use AIGC technology. This requires students to have an in-depth understanding of the functions and operations of AIGC tools, while also emphasizing their ability to flexibly apply these tools in practice to solve real-world problems. At the professional creation level, the focus of talent cultivation is on fostering students' ability to integrate AIGC technology into professional creation (Wang Yi & Fu Shuai, 2025), such as in fields like animation and game design. The cultivation mechanism at this level emphasizes the deep integration of creativity and technology, encouraging students to unleash their creative potential while mastering the essence of technology to create works that are both professionally competent and artistically captivating. Students will learn how to apply AIGC technology in actual artistic creation to enhance the creativity and artistic quality of their works. At the highest level, higher education institutions aim to cultivate high-end talents capable of conducting AIGC technology innovation and research. These talents must possess a solid technical foundation, innovative thinking, and research capabilities to seamlessly integrate art creation with technology, leading

innovation and transformation in the industry. Students will participate in the development process of AIGC technology, exploring new application areas and potential possibilities, contributing to the future development of the digital arts industry.

4.2 Curriculum Development

To meet the diversified talent needs, higher education institutions need to build a comprehensive, multi-level curriculum system that integrates foundation, creativity, technology, and practice, ensuring that students can comprehensively acquire the knowledge and skills required (Li Chunhong, 2024). The core of this curriculum system is to provide basic education and operational training related to AIGC tools, aimed at enabling students to master and flexibly use these tools. The curriculum content covers the working principles of AIGC tools, an introduction to their operational interfaces, basic function explanations, and demonstrations of commonly used techniques, laying a solid foundation for students' further learning.In creative courses, the focus is on exploring the integration paths between creative expression and AIGC technology, motivating students to use artificial intelligence technology to realize creative ideas. These courses will guide students on how to expand creative thinking using AIGC technology and how to transform creative concepts into uniquely charming art pieces. In technical courses, the core principles of AIGC algorithms, as well as basic knowledge of machine learning and deep learning, will be deeply analyzed to establish a solid technical foundation for students. Through these courses, students will gain a deep understanding of the operational mechanisms behind AIGC technology, laying a solid foundation for future exploration in technological innovation and research. Students will also learn AIGC algorithm development and optimization techniques to enhance the efficiency and effectiveness of technological applications.Practical courses focus on a project-driven teaching model, where students improve their practical skills through AIGC-based industry projects. In these courses, students will actively participate in artistic creation practices, applying the knowledge they have learned to solve real-world problems,

thereby deepening their understanding of industry needs and cultivating professional qualities and market competitiveness (Cheng Guohui, 2024).

4.3 Teaching Mode Innovation

To effectively respond to the rapid development of AIGC technology and the dynamic changes in educational needs, higher education institutions must continuously explore innovative teaching paths (Hu Yali, 2025). In the teaching process, universities can flexibly integrate online and offline teaching, combining AI tools with traditional hand-drawing tools to offer students diverse learning experiences. The blended teaching model aims to take advantage of the convenience of online resources and the directness of offline interaction, collectively creating a flexible and efficient learning environment where students can choose the learning mode that best suits their pace and preferences. Through project-based practice, students will be able to master the application of AIGC technology and improve their problem-solving abilities. The project-based teaching model emphasizes practical learning, allowing students to gradually master knowledge and skills through completing specific projects, thereby cultivating their practical abilities and teamwork spirit. This teaching model helps students gain a deeper understanding of the value of AIGC technology in real-world applications and the challenges it faces.Furthermore, encouraging interdisciplinary collaboration is an important part of innovative teaching models. For example, students from computer science and art disciplines could collaborate on AI creation projects to foster teamwork abilities. The collaborative teaching model aims to promote in-depth communication and cooperation between different disciplines, helping students develop interdisciplinary thinking and working modes, laying a solid foundation for their future career development (Tian Hui, 2025). In this model, students will learn how to play an active role in multidisciplinary teams and how to integrate knowledge from different fields to innovate.

4.4 Optimization of the Assessment System

To more accurately measure students' learning outcomes, higher education institutions need to optimize their assessment systems. This system should not only focus on students' skill acquisition but also assess their creativity, technical abilities, and

mastery of AI applications, offering a more comprehensive and multidimensional view of students' achievements and motivating them to expand their capabilities in various fields. The evaluation system covers multiple dimensions, including coursework, project practice, creative planning, and technical reports, ensuring the comprehensiveness and fairness of the assessment.

In response to the rapid development of AIGC technology, a dynamic evaluation mechanism will be established, incorporating periodic feedback and continuous guidance. This mechanism can quickly capture students' learning progress and potential issues, providing immediate feedback to teachers, helping students adjust their learning strategies in a timely manner, and optimizing learning outcomes. Compared to a purely results-oriented evaluation, this mechanism places more emphasis on process evaluation, aiming to promote students' continuous progress and self-improvement.

4.5 Construction of Digital Art Teaching Resources Based on AIGC in Higher Education

In the field of digital art education, the effective construction of teaching resources is a core element for improving teaching quality (Zhang Ronghui, 2024). With the rapid development of AIGC technology, new pathways are being opened for the innovative construction of teaching resources. To enrich teaching content and enhance the interactivity and practicality of instruction, higher education institutions should actively build AIGC resource libraries, promote resource-sharing platforms, and establish virtual simulation laboratories.

The primary step is to create a comprehensive AIGC resource library that includes operation guides for AIGC tools, case studies, technical manuals, and other diversified materials, covering various content creation tools for images, videos, and audio. These resources will help students quickly master the use of AIGC tools and provide solid technical support for their creative activities. At the same time, universities should collaborate to build open resource-sharing platforms, facilitating the exchange of AIGC teaching resources, optimizing resource allocation, and improving utilization efficiency. The construction of virtual simulation laboratories is

crucial for enhancing students' practical abilities. In the virtual laboratory environment, students can use various AIGC tools for online experiments, simulating real creative processes. For example, in animation programs, virtual laboratories can simulate the full animation production process, from character design to dynamic effect presentation, allowing students to operate in a virtual setting. This not only makes learning more engaging but also significantly enhances students' practical skills.Additionally, the diversification of teaching resources is key to improving teaching quality. Universities should focus on developing online courses, such as MOOCs, to popularize the basic theories and technologies of AIGC. These online courses can break the constraints of time and space, benefiting a wider student group. Developing experimental teaching materials is also an effective strategy, allowing students to systematically learn AIGC tools and their applications, quickly master skills, and apply them in creative practice.

5. Application Prospects of AIGC in Digital Art Education in Higher Education

While AIGC technology has brought numerous opportunities to the field of digital art education, it also comes with a range of challenges. The foremost challenge lies in ethical and legal issues, particularly the copyright and intellectual property concerns related to AIGC content creation (Han Xinlei, 2024). In the educational context, it is crucial to guide students on the proper recognition and use of AIGC-generated content, preventing intellectual property infringements. In this regard, universities can establish detailed usage guidelines and educational policies, strengthening guidance and education for students.Another major challenge involves technology and costs. AIGC requires high hardware and software configurations, which may result in significant investment that some universities cannot bear alone. To address this issue, universities can collaborate to build shared platforms and use cloud computing technologies to reduce costs. Additionally, governments and enterprises can provide funding and technical support to help universities overcome technological and financial barriers. AIGC education also demands a dual background in both art and

technology from faculty members (Weng Runpeng, 2024). To meet this challenge, universities can enhance teachers' professional competence through training, interdisciplinary collaboration, and inviting external experts. Teachers should be encouraged to engage in AIGC-related research and practice, continuously updating their knowledge and skills.Some students may have biases against or feel uncomfortable with AIGC-generated content. Universities need to guide students to understand the value of AIGC creation through curriculum design and case studies. By personally participating in creative practice, students can experience the convenience and innovation brought by AIGC technology, thereby improving their acceptance and application abilities.With the continuous evolution of technology, AIGC may lead to new transformations in the education sector, such as the emergence of intelligent teaching tools and personalized learning paths. These changes will have a profound impact on art creation models, learning modes, and the art market. Future research could focus on the long-term impact of technological development on digital art education and the evolution trends of AIGC technology. At the same time, ethical, legal, and social issues surrounding AIGC in education must be addressed to ensure the healthy development and rational application of the technology.The application of AIGC in higher education digital art education shows significant advantages, but the challenges should not be ignored. By constructing talent training frameworks, teaching resource systems, and evaluation systems that adapt to the AIGC era, universities can more effectively cultivate the next generation of digital art talent. Moreover, universities need to continue exploring and innovating to meet the development trends of AIGC technology and the dynamic changes in educational demands. This research aims to provide guidance for higher education institutions in cultivating a new generation of digital art talent in the AIGC era and hopes to contribute to the future development of digital art education.

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