

РАЗДЕЛ 7

ИНФОРМАЦИОННЫЕ СИСТЕМЫ И ТЕХНОЛОГИИ В ДИЗАЙН-ОБРАЗОВАНИИ

ПРИМЕНЕНИЕ AIGC (TEXT2ART) ТЕХНОЛОГИИ В ПРОЦЕССЕ ОБУЧЕНИЯ ВИЗУАЛЬНОМУ ДИЗАЙНУ

APPLICATION OF AIGC (TEXT2ART) TECHNOLOGY IN VISUAL DESIGN EDUCATION

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Целью данной статьи является исследование использования технологии искусственного интеллекта генерации контента (AIGC), в частности, Text2art, для улучшения образования в области визуального дизайна. Использование технологии Text2art имеет несколько преимуществ, но также некоторые недостатки и противоречия. Тем не менее, включение AIGC в образование в области визуального дизайна может помочь преодолеть разрыв между традиционным образованием в дизайне и быстро развивающимся технологическим ландшафтом. В данной статье исследуются потенциальные преимущества внедрения технологии Text2art в образование в области визуального дизайна и предлагаются способы ее внедрения в классе.

Ключевые слова: Text2art; AIGC; визуальный; дизайн; образование.

The aim of this paper is to explore the use of Artificial Intelligence Generated Content (AIGC) technology, specifically Text2art, in enhancing visual design education. The use of Text2art technology has several advantages, but also some shortcomings and controversies, however, the inclusion of AIGC in visual design education can help bridge the gap between traditional design education and the rapidly evolving technological landscape.

This paper explores the potential benefits of incorporating Text2art technology into visual design education and suggests ways to implement it in the classroom.

Keywords: Text2Art; AIGC; Visual; Design; Education.

1. AIGC AND VISUAL DESIGN EDUCATION

1.1. AIGC (TEXT2ART)

Text2Art is an artificial intelligence technology that belongs to the word category of AIGC and generates artworks based on natural language. It uses NLP (*Natural Language Processing*) to convert user input text into artworks. Generative art is defined as 'an artwork produced by a system or process that has been designed and set by the artist with a number of rules, parameters, constraints and initial conditions. This means that the «generated artwork is created through a computer program, algorithm or other automated process» [1, p. 8]. Text2Art can generate various styles of artworks, including paintings, images, and photos, based on user input text. Representative products include Disco Diffusion, Stable Diffusion, *DALL-E 2*, MidJourney and other representatives of «generic Model, as well as China's Meitu AI, Avatar Studio, Tiamat and Wanxing Ai drawing» [2, p. 8].

1.2. COPYRIGHT DISPUTES OF AIGC WORKS

In 2022, the news that «AI paintings won the first prize in the competition and angered human artists» involved copyright issues, until the U.S. Copyright Office ruled in February 2023 that the pictures generated by AI were not subject to copyright protection, but how to distinguish AI works created by non-human artists is still an unsolved problem.

1.3. THE IMPACT OF AIGC ON ART AND DESIGN EDUCATION

As educators, we must recognize the impact of disruptive technologies and adopt a proactive approach to integrate *AIGC* skills into art and design education. We should consider the value of AIGC, adjust teaching objectives, and guide students in responsible use of this tool. This will enable us to effectively harness digital technology in education and improve the quality of talent development.

1.4. THE PROBLEMS OF STUDENTS USING AI TO DO HOMEWORK

As with *ChatGPT*, if students use AI I for their homework, it will inevitably affect the fairness of academic performance evaluation. However,

the current technology is unable to judge whether some excellent student paintings must be generated by Text2Art, and directly make a negative judgment, which may cause a misjudged case of homework grades. Therefore, teachers should wait for the promulgation of the Mandatory Text2Art ID identification.

2. REORIENTING VOCATIONAL EDUCATION TRAINING

The adjustment of industrial structure leads to changes in the demand for talents. The Ancient Chinese proverb «Chun Jiang Shui Nuan Ya Xian Zh» said: «In spring, when the river water warms up, ducks are the first to know». In this metaphor, it represents that only those who have experienced something personally can truly understand and feel it. Similarly, developers in the IT industry are better able to directly experience the industry's internal changes and trends, thereby making more accurate predictions and decisions. The massive layoffs in the IT industry are also related to AI technology. AIGC has drawn attention from many Chinese companies. According to industry insiders, large enterprises have already incorporated AIGC solutions into their creative environments, while medium-sized ones are considering layoffs. Small business owners, on the other hand, believe that AIGC-generated works are better than their original works. Additionally, the AIGC field has created many new career opportunities, such as prompt engineers.

AI is a driving force behind the Fourth Industrial Revolution, resulting in productivity growth and changes in occupations. Art and design educators must stay current on employment trends, empower education with intelligent technology, and design courses that focus on the combination of AI-generated graphics technology, creativity, and job skills to enhance students' employability.

2.1. SCARCITY OF CHINESE ART AND CULTURAL DATABASES ON THE AIGC PLATFORM

The mainstream Text2Art platform suffers from poorly annotated Chinese artwork data, which directly affects the quality of the Chinese style work generated. When utilizing stable diffusion and MidJourney, we encountered difficulties in distinguishing between Chinese, Japanese and Mongolian features and costumes, and ukiyo-e was often mistaken for traditional Chinese paintings. However, Chinese AI companies are working to strengthen China's role in the larger language model and to catch up with the AI technology field by improving the annotation and clarity of Chinese

cultural and artistic datasets. Students should therefore be encouraged to actively participate in this work in order to promote the development of indigenous Chinese word art models.

2.2. THE LOW CONTROLLABILITY OF TEXT2ART WORKS

AI art generation engines are often unpredictable in practical applications, requiring time-consuming testing and fine-tuning. MidJourney has helped artists win competitions, such as Jason Allen's «Space Opera» (App. 17, fig. 2). It took nearly 900 attempts and 80 hours to complete. Thus, it is not ideal for real-world projects. MidJourney has limited customization and styling capabilities, making it only useful for inspiration and productivity, not deep integration into workflows. Teachers should explain these limitations to students and help them assess the feasibility and time spent using AI-generating tools. Examples of images synthesized from textual prompts (App. 19, fig. 1).

2.3. THE CODING THRESHOLD OF AIGC IS RELATIVELY HIGH

Using AIGC still requires some basic knowledge of the command line and English, which is a certain threshold for many art students. However, the time and effort spent is worth it, as long as students are willing to engage with it and teachers can patiently guide them through the programming tools. At least a seed can be planted in their minds to expand their design horizons and creative thinking.

2.4. THE PROFESSIONAL SYSTEM NEEDS TO BE ADAPTED

AIGC can play a significant role in three aspects: firstly, art generation, allowing users to generate painting works, as well as clothing textures for game studios and creative agencies; secondly, advertising creativity, by automatically generating and designing creative sketches, reducing communication costs between designers and clients, and quickly clarifying design requirements, thereby avoiding repetitions and even rework; thirdly, professional design, combining AI drawing with professional knowledge in fields such as 3D modelling, architectural design, industrial design, and others. As artificial intelligence first draws rough sketches based on prompts and then professional personnel complete the subsequent work.

With the advent of Text2Art technology, many of the production processes known in the industry as production graphics, such as packaging renderings, clothing renderings, architectural renderings, web and mobile UI renderings and elemental graphics, can be produced with AIGC tools.

With the help of the Text2Art, this process transforms the main human ability «from a “finished design” to a “prompt” engineer» [3, p. 1], and the requirements for people in the field of rendering change from a detailed sculptor of paintings to a “sentence maker” with a rich artistic and cultural connotation and vision. «Sentence make». More subdivided segments such as game processing segments, UI processing segments and the production of many small elements, such as “art assets” in the gaming industry, have also emerged as integrated platform full-stack solutions. As a result, the demand for original creative design talent for related art assets has been significantly reduced.

Consideration should be given to merging disciplines that are over-segmented, and in particular the digital end to digital end design disciplines could be prioritized for merging and reorganization. For example, visual communication, UI, environmental art, interface design and production, digital imaging technology. As the IoT is not yet developed, disciplines that focus on manual practice, such as painting, jeweler’s design and production, leather goods design and production, clothing display and show design, and arts and crafts, can still be appropriately retained, but AI assistance is also bound to be the general trend. When AIGC becomes popular, the integration and reorganization of related disciplines will also be the way forward.

2.5. AIGC-BASED CURRICULUM CHANGES FOR ART AND DESIGN

MAJORS AS AN EXAMPLE

With the help of Text2Art AI, the competencies required of students in the field of rendering and elemental design have to change. In the field of digital creation (including digital media, animation and game design, interface design, etc.), The direction of competence development for students becomes either being able to reach the level of an artist and control the styles, or being of an average level but able to use Text2Art for computer-aided design. Those who are average at both levels may be eliminated from the market.

With the addition of AIGC, students in all types of projects in both creative and perfecting the details need the skills to be able to navigate Text2Art. Therefore, AIGC-assisted design can first be integrated into the curriculum as an elective course to understand the potential of students through teaching experiments and gradually expand into the construction of a relevant curriculum system to enhance students' overall technological literacy.

AIGC-related courses, such as Professional English, Intercultural Art and Cultural Appreciation, Creative Code, And Information Literacy, can also be offered to improve students' comprehensive ability to make use of AIGC.

2.6. THE BLENDED TEACHING BECOMES THE NEW NORM

The integration of AI generation and rendering with Art Design requires collaboration from multi-background talents in education, science and research. The Art Design program has launched a collaboration with experts to promote Text2Art art and strengthen creative design expression with AI tools. This involves exploring prompts for Text2Art art, improving collaboration methods, attracting more experts in the field and integrating relevant domain knowledge into the curriculum. This new paradigm of hybrid teaching has become the new norm in Art Design.

3. NEW TASKS FOR TEACHING BASED ON THE PROMPT'S PARADIGM

To help students understand the principles of Text2Art, teachers should clarify the differences between generating similar images and traditional art design. This can prevent confusion arising from unpredictability. Teachers can also provide examples of high-quality prompts to help students adapt their creative ideas.

3.1. AWARENESS OF TECHNICAL THRESHOLDS AND COPYRIGHT RISKS

While popularizing the knowledge of Text2Art, teachers should recommend similar platforms in their own countries, let students understand the technical advantages and shortcomings of domestic Text2Art platforms, use various Text2Art derivative platforms in a reasonable manner, and clarify the risks under copyright laws and regulations and the correct values of AI technology, so as to help students establish the correct attitude and philosophy towards the use of Text2Art.

3.2. CLARIFY THE PURPOSE OF LEARNING

Topics chosen for the course can be closely related to cultural developments in National Culture, including historical, cultural, creative and educational topics, such as National cuisine, oracle, ethnic patterns, monuments, historical figures, the 24 solar terms, etc. Projects such as "Text2Art of My Hometown" and "Text2Art of the Great Wonders" projects to promote students' heritage and development of Culture. At the same time, as the Text2Art technique tends to make students' imaginations run wild, teachers should guide students to use the prompts as a starting point to improve the efficiency of their training.

3.3. INTEGRATED ENHANCEMENT OF STUDENTS' INFORMATION LITERACY

In the prompt's paradigm, only those with sufficient artistic knowledge can use the appropriate text to guide the AI in generating the desired picture. Therefore, students should not just passively acquire information, but should actively output content. In this paradigm, the basic competency that is really tested is whether students are able to think creatively with their own perspective and initiative. In fact, the person who is the creatively driven AI himself needs to have a sufficiently enriched background of artistic knowledge. The course therefore needs to emphasize how students can enhance their artistic knowledge, the ways in which they can do so and the directions in which they can do so.

In addition, the more mobile phones are used, the more important it is to improve students' SQ (Searching Quotient) and learning how to use search engines to improve their independent search skills is also an important skill. Informing students of how existing prompts sharing platforms will enhance their independent cue searching skills. Teachers need to inform students how existing prompts sharing platforms can achieve this.

Equally important to emphasize in terms of information access is the ability of students to access classic works of art, not only through the internet, but also in the many fine paper books available. In particular, the award-winning works of our national art exhibitions and the finest works of art from all dynasties are deposited under the Internet, and if students do not make full use of libraries and bookshops to read these paper books and picture books, they may be neglecting ancestry's valuable cultural heritage. Teachers should therefore focus on the aesthetic education of their students and help them to understand the profundity of the fatherland's artistic treasures.

CONCLUSION

AIGC has brought about a huge impact and career crisis for practitioners in various industries. However, in the face of the impact, there are also many people who are willing to think calmly and actively participate, and many creative industry practitioners are extremely enthusiastic in their exploration. As Art Design teachers, we should also take a rational view of the various phenomena in the art education and education industry, while actively thinking about it and making adequate theoretical research and practical preparation for digitally empowered Art Design education.

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ИНСТРУМЕНТЫ СОЗДАНИЯ 3D ГРАФИКИ ДЛЯ ВЕБ-ПРИЛОЖЕНИЙ НА МОБИЛЬНОЙ ПЛАТФОРМЕ

3D GRAPHICS CREATION TOOLS FOR MOBILE WEB-APPLICATIONS

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Рассмотрены особенности создания трехмерной графики для мобильных приложений и игр на примере трехмерных моделей веб-каталогов и игровых моделей средствами *Unity*, *Blender* и *Adobe Photoshop*. Проанализированы способы интегрирования таких моделей в веб-приложения на основе *API WebGL*, библиотеки *Three.js*, а также программы *Verge3D*.

Ключевые слова: 3D-моделирование; мобильное приложение; API визуализации 3D в браузере; технология WebGL; постобработка в Adobe Photoshop.

The features of creating three-dimensional graphics for mobile applications and games are considered on the example of three-dimensional