Research on Artificial Intelligence in the Field of Art Design Under the Background of Convergence Media

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Abstract. With the continuous development of artificial intelligence, the application of artificial intelligence no longer repeats the “science and technology”, “medical research and development”, “computer” and other engineering disciplines. In recent years, artificial intelligence has also been fully developed and innovated in the “art” field. This paper will focus on the research of artificial intelligence in the field of art in the context of convergence media, and hope to provide new ideas and new dimensions for the future of art design.

1. Introduction
On January 25, 2019, the 12th collective study of the political bureau of the communist party of China (CPC) central committee put “classroom” at the forefront of media integration. General Secretary Xi Jinping emphasized in the presidency that it has become an urgent task for us to promote the integration and development of the media and build the entire media. At the same time, artificial intelligence has officially entered a period of vigorous development in China from 2019, and a wide range of artistic works in the art design industry are also emerging. Under this background, how artificial intelligence will play its unique advantages and attractiveness in the field of art and design, which will be the key to this discussion and research papers.

2. Convergence media and artificial intelligence in the field of art design
Since the 18th National Congress of the Communist Party of China was held, “Convergence Media” has entered people's field of vision with its “advanced” and “unique” attitude. Now we are in the context of the era of media integration, and artificial intelligence is gradually involved in various industries. Among them, the application and function of artificial intelligence in the field of art design are becoming more and more extensive.

2.1. The meaning and development of the convergence media
With the continuous development of the times and the vigorous development of technology, big data is also applied to our lives, and the form of media is constantly evolving. From traditional media to new media, and then to today's convergence media. “convergence media” is a carrier that takes full advantage of the media and combines the plastic characteristics of traditional media such as radio, newspapers, television and new media (including digital technology, computer networks and wireless communication networks, as well as computer and mobile phone terminal communications form). In summary, convergence media will combine the advantages of traditional media and new media to create an integrated emerging media that is “flexible in resources, complete in content, and integrated
in publicity” [1].

One of the innovations of convergence media is to blur the boundaries of various media and merge the advantages of different media. (Figure 1). For example, the convenience of broadcasting (which has been retro in the art field), the intuitiveness of television, the high loyalty of users, the unbounded nature of the Internet, and the media can be well integrated with these media. Integrated media is the product of the times. In addition to the innovation of ideas and models, it also combines the development of artificial intelligence. Establishing an “inclusive” database to reconstruct the original print media content is of great significance for preserving historical culture and better developing future culture. In the era of integrated media, innovation is eternal life. We need to better integrate traditional media with new media, and at the same time adhere to the core of “artificial intelligence” to achieve the integration of “users” and “services.”

![Convergence media carrier evolution process](image)

**Figure 1.** Convergence media carrier evolution process

2.2. Artificial intelligence enters the field of art design

Over the years, the emergence and development of artificial intelligence have been accompanied by controversial voices, such as “replacing humans”, “non-emotional” and “harm to humans”. However, with the advent of the era of science and technology, we have to admit that artificial intelligence has not only not brought too many negative effects, but also promoted the accelerated progress of science and technology. Artificial intelligence has gradually entered the field of art design. As we all know, the reason why works of art are precious is because the human brain constantly receives new things while combining the author's own inspiration and ability to create. From the beginning, artificial intelligence only assisted humans in providing technology for design, and now it has begun to create works independently. Artificial intelligence is gradually entering the field of art design.

3. The performance of artificial intelligence in the field of art design

At the present stage, people's diversity and acceptance of artistic works are increasing. Under this premise, artificial intelligence provides a new creative idea and form for the creation of art works. For example, intelligent data-based devices, art interactive video works, chip technology and future clothing[2]. These products are the new era design works created by artificial intelligence technology. “Perhaps in the near future, art will no longer be exclusive to humans, and artificial intelligence has become a trend to intervene in art.” Lu xiaobo, (dean of the academy of fine arts at Tsinghua university)[3]. With the continuous maturity of artificial intelligence, emerging artificial intelligence
independently created paintings, text content generation design, poetry collections, trailer clips and other constantly attract people's attention.

3.1. Device space design of artificial intelligence technology
In May 2018, an exhibition called “Poetic AI” was launched by digital creation studio OUCHHH (Figure 2). The exhibition uses learning machines and artificial intelligence algorithms to study more than 20 million lines of text, including books, articles and theories of important scholars from ancient times to the present. When words and images are converted in a 3,300 square meter space, with sound, light, and shadow, the audience is immersed in the impact of the combination of history and modernity. This work is a typical creation of artificial intelligence under the background of convergence media. It perfectly combines the paper media of traditional media and the new media device through artificial intelligence to achieve the symbiotic creation of interaction with the audience.

![Figure 2. “Poetic AI” exhibition organized by digital creative studio OUCHHH](image)

In 2019, the Ultravioletto studio created an AI neural mirror art installation called “Neural Mirror” (Figure 3)[4]. This work uses artificial intelligence and facial recognition to build human data images, enabling viewers to think about the development of artificial intelligence in the artistic environment. This work fully demonstrates the design and application of artificial intelligence technology in today's art installation space. It can be seen that artificial intelligence can be used by artists to combine with art to create.

![Figure 3. Ultravioletto studio installation “Neural Mirror”](image)

3.2. Art paintings created by artificial intelligence technology
As early as 2015, Google launched the Deep Dream system using artificial intelligence technology for painting creation. It redesigns images by recognizing them and drawing[5]. In 2017, Google again launched a tool called Autodraw, which uses algorithms to help users draw simple numbers and effectively help users optimize. Google has been working to combine artificial intelligence with the art
of painting.

In 2016, the artificial intelligence work “Next Rembrandt” came out (Figure 4), which caused a lot of discussion in the art world. This work is actually a portrait drawn by artificial intelligence, which using data analysis and algorithms to mimic the painting style of famous Netherlands painter Rembrandt. The computer analyzed the data from Rembrandt's 346 works, identified more than 60 points that could be aligned on the face in the picture, and fully reproduced this work. It can be seen that artificial intelligence technology can already be used for painting creation, and more realistic and valuable works will be created in the future.

![Figure 4. Artificial intelligence work “Next Rembrandt”](image)

In addition to these works, there are many design works in which artificial intelligence technology is applied to painting. For example, the artist Gene Kogan from New York also used machine learning algorithms to create many works, such as “Alice's 17 Famous Paintings”, “painting on glass” and so on. At the Christie's auction in 2018, a portrait painted by artificial intelligence, “Portrait of Edmund Bellamy” (Figure 5), was auctioned, which eventually sold for $432,500. This indicates that artificial intelligence has begun to enter our field of vision at a rapid speed, and people have begun to question whether the paintings created by artificial intelligence are real works of art? At present, even algorithms are designed by human-led ideas. People just use cutting-edge technologies to create newer and more singular works. In the prospect that the media is gradually coming into our sight, we should not exclude the application of new technologies creation.

![Figure 5. “Edmund Bellamy's Portrait” exhibition renderings](image)

### 3.3. Creating Movie Images with Artificial Intelligence

In 2016, IBM's artificial intelligence Watson completed the creation of the movie “Morgan” trailer (Figure 6). Engineers showed Watson trailers for hundreds of horror movies. Watson analyzes the images, sounds, intonations, and music of these trailers to determine emotional relationships. The trailer edited by artificial intelligence not only greatly shortens the working time of the staff, but also on this basis, the trailer edited by artificial intelligence is very creative and promising.
In the same year, the world's first artificial intelligence film “Sunspring” (Figure 7) also appeared in the 48-hour challenge unit of the London Science Fiction Film Festival. Benjamin, the screenwriter of this movie, has read thousands of science fiction movies. Although the filmed lines, pictures, and plots have many problems, this movie is a landmark work of artificial intelligence moving into the field of art design and image creation.

4. The artistic creation of artificial intelligence in the context of convergence media

Through analysis, we can see that artificial intelligence is now gradually entering the art field and showing the power of technology with its innovative attitude. Nowadays, in the context of convergence media, how to use artificial intelligence for better artistic creation will be a major trend that cannot be ignored in future art design.

4.1. The promoting function of artificial intelligence in art teaching

In many years of art teaching, humans have experienced both paper and face-to-face teaching. Until now, we have used Internet e-learning and technology to lead students to recognize the charm of art. Under the guidance of this idea, we can gain insight into the problem from a new perspective by understanding and reconstructing the nature of the problem[6]. This is the stage of research and exploration from traditional media to new media. Furthermore, setting up majors such as new media research, artificial intelligence technology, etc. in many universities is enough to prove that people attach great importance to innovative education and teaching.

Now it is in the age of media convergence, taking advantage of the possibility of media breakage, and combining the comprehensiveness, diversity, technology and innovation of both traditional media and new media to better conduct art teaching. At the same time, we attach importance to the
application and involvement of artificial intelligence in art teaching, to improve students' creative awareness, accept the rapid development of the times, and accept the convenience, efficiency, and innovation of artificial intelligence. In addition to retaining its own artistic expression in the creation of artificial intelligence technology, it will create more avant-garde and forward-looking artistic works. Making good use of artificial intelligence technology will play an important role in promoting art teaching in universities.

4.2. Artistic creation of artificial intelligence through media convergence

At present, the prominent advantages of artificial intelligence in the field of art design are algorithms, data processing, and so on. Relying on big data platforms, artificial intelligence has demonstrated technological strength beyond human beings. Many artists' artificial intelligence art works usually take advantage of this outstanding advantage. However, in works related to thinking, emotion and innovation, artificial intelligence is still insufficient. It is believed that with the continuous development of science and technology, designs like this will also be overcome by artificial intelligence.

On this basis, making good use of the universality and inclusiveness of media convergence will enable artificial intelligence to improve the creation of future artistic works from multiple levels and perspectives. Take advantage of big data to make the most of the advantages of artificial intelligence at this stage. It can not only reduce the burden on the staff, effectively reduce unnecessary time for creation, but also integrate the power of technology into the work. With the advent of the 5G network and financial media era, more and more art works full of artificial intelligence technology will appear.

4.3. Emotional reflection of artificial intelligence works of art

Based on the background of the media era, the artworks created by artificial intelligence show a strong level of algorithmic application and technology. At this stage, when people use artificial intelligence technology to create artworks, the core themes are produced by human beings, and creative and imaginative works are produced by what the human brain sees, hears, and thinks about. From this we can see that the current independent works of artificial intelligence are just statistics and stacking of big data. There is a great lack of the most critical emotional expression in art. At the same time, this is why the academic world is full of controversial artificial intelligence works.

As we all know, emotional integration is very important in the creation of artistic works, so that the works can be reflected by the audience and users. Tolerance to society and empathy are important criteria for evaluating a work. Therefore, in the future, the use of artificial intelligence technology in the creation of artists must complement their emotional expressions into the works, and combined with the advantages and characteristics of the media will be able to create excellent works of art.

5. Conclusion

In summary, we can see that artificial intelligence has gradually entered the art field in recent years. Through the analysis and interpretation of works, in the context of today's convergence media, artificial intelligence art works have shown a trend of diversity, technology and independence. But it is still lacking in emotion and reflection. More and more artists are paying attention to the artistic design of artificial intelligence. From the perspective of future trends, whether it is the “convergence media” core development strategy advocated by the General Secretary or the 5G era that we are all embracing, we must believe that the pace of artificial intelligence exploration will not stop. Accompanying it is the development in the art field will definitely flourish. Artists will create more outstanding, independent and innovative artificial intelligence works of art, adding glory to the new art era.

Acknowledgments

Thanks to the guidance of professor Zhan Binghong and Guo Fei of Beijing institute of fashion technology and the help of Tian Jiaxin, I completed this research. I hope I can have more ideas and innovations in the field of artificial intelligence and design in the future. Thank you again.
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