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Innovation and Development of Art Design in the Artificial Intelligence Era

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Abstract. As digital technology continues to advance, artificial intelligence is rapidly changing the digital content and application scenarios we were once familiar with, and giving rise to numerous new forms. In the field of art design, while artificial intelligence brings commercial success and innovative experiences to the public, it also brings new challenges and problems. Facing the future and new application scenarios, Art design creators should actively respond to the innovative ideas and methods brought by artificial intelligence to art and design, learn and utilize proactive response strategies, updating their toolboxes, actively face cross-disciplinary collaboration, and focus on the depth of the experience. Respond to this era of rapid development of digital technology with concrete actions.

Keywords. Artificial Intelligence, Art Design

1. Introduction

In recent years, artificial intelligence has become a hot topic in society, rapidly changing the digital content and application scenarios we were once familiar with, bringing innovative experiences to the masses, penetrating and changing every aspect of our lives. Artistic creations related to this topic are also emerging, from "*Westworld*" to "*Ready Player One*", which constantly provokes endless imagination and reflection, full of expectations, imagination and worries.

After more than half a century of development since its proposition, artificial intelligence has become increasingly rich and diverse in form and function, and is moving from violent exhaustion of specific uses to machine learning and deep learning, gradually revealing its powerful capabilities and potential. Games like AlphaGo and Deep Blue are typical of two generations of artificial intelligence. This kind of operation based on big data and algorithms is similar to our learning process, which gets grown week by week. Of course, with the increasing number of application scenarios and application content, the debate on the future development of AI comes along, resulting in many different views, which is also seen in the field of art design for the first time.

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Figure 1. Posters of *Westworld* and *Ready Player One*.

2. New Challenges and Changesx

In the field of art design, too, change is coming, and the age of intelligence is redefining the scope of art design itself. In the field of traditional design art, for example, we design around objects as the core; then we expanded to focus on design thinking, developing creative approaches such as emotional design; and now we are conducting data-centric computational design as the core. In a way, our design is increasingly focused on a solution-focused path. More and more application scenarios are now incorporating artificial intelligence innovation practices, from software to hardware, from Luban to Ostagram, from smart speakers to autonomous vehicles, from City Brains to Intelligent Medical Service, from image recognition to machine learning, and more. Perhaps you are not paying attention, but we are already living in such an environment every day.

Certainly, with the popularity of artificial intelligence application scenarios, inevitably also brings the discussion of the career crisis. While it brings new creative ecology and new career opportunities, the reality is that many professions are indeed beginning to face partial replacement. What kind of changes will the art design field face?

First of all, there will be a trend of "everyone is a designer" in the field of art design, which has a low threshold. Software such as WOMBO, Wix, Nsynth Super, etc. will become the creation and design tools for ordinary people, which will be popularized and expanded in many less demanding application scenarios. Secondly, batch and super-quantitative application scenarios will popularize artificial intelligence tool software to play the function of improving efficiency. The ability of Luban has been verified, and the super-quantitative processing ability has solved a large number of low-end and repetitive design work of Alibaba, which of course means that the first replacement will be the traditional low-end positions of "art workers". Thirdly, personalized, creative digital applications and results will be endless. With the increasing popularity of technology and capital for artificial intelligence, more and more capital and practitioners to cross into this field, making the ecology and results are greatly enriched. Artificial intelligence is not only being integrated into traditional e-commerce platforms like Amazon and Taobao, but also in all kinds of game applications, chatbots, analytics software, and 3D reconstruction software, which have all been popularized to the public one after another. Fourthly, computational design will promote cross-disciplinary collaboration. The essence of artificial intelligence is data plus algorithms, the future of "computational design" will be based on big data, cloud computing, artificial intelligence and other technologies to enhance the infinite design possibilities and preview testing.

Using big data and predictive analysis to create or highly customize new products, design generation by imitating natural evolution will make design results more scientific, rational and flexible.

Table 1. Part of application platforms for different artificial intelligence products.

Product Name	Use for	Short Description
Disco Diffusion	Image creation tools	A tool for digital art creation using deep learning with artificial intelligence.
Lubanner	Intelligent image processing platform	Batch design all kinds of scene pictures according to the product picture.
Ostagram	Image Processing Tools	Generate a fused image by following the painting style of another image.
Colormind	Color scheme generator	Learn color styles from photos, movies and pop art.
Novel AI	Painting tools	AI painting generator.
Nsynth Super	Sound synthesizer	Deep neural networks are used to learn the characteristics of sounds and then create completely new sounds.
Wordsmith	AI writing tools	Provides plug-ins for integration with other data software to recall data and generate reports.
Font Joy	Font combination tool	Generate font combinations from different fonts by deep learning.
Dalle2	Painting tools	Create highly realistic images.
Amazon echo	Smart speaker	Intelligent voice interaction technology implanted into traditional speakers.
Prisma	Smart picture creation tool	Imitate the painting style of world-famous artists.
Machine Learning Agents	AI training infrastructure platform	An environment where intelligent agents are trained by machine learning methods such as deep augmented learning.
IBMWatson	Technology platform	Information analysis, natural language processing and machine learning.

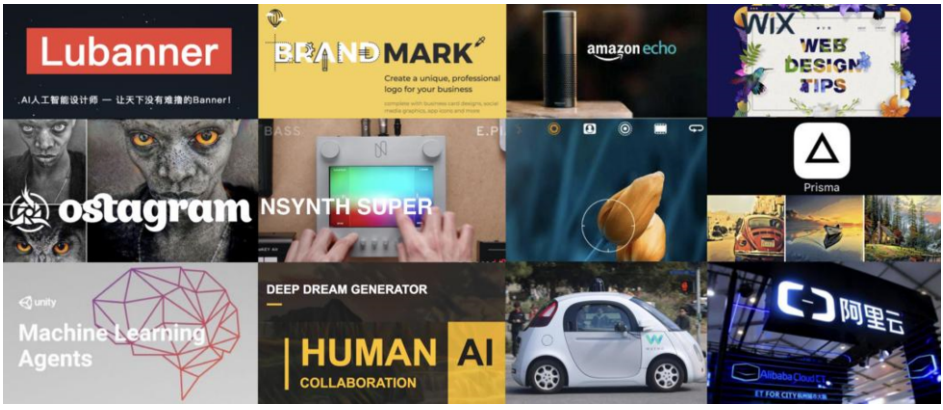

Figure 2. Various types of AI products.

3. New Ideas and Means

As artificial intelligence continues to continuously change the way we think and create design, it brings innovation in experience while improving efficiency. In the next decade, new technologies may shape a completely different art design industry and application scenario than it is today. And for a new generation of creators, they will also need to start facing new challenges and problems brought about by artificial intelligence in various new fields.

Art design creators need to learn and utilize proactive response strategies. Today, whether it's TikTok, Facebook, or Taobao, each user may be surrounded by thousands of tags. And artificial intelligence can clearly understand your desires, needs, purposes, and impulses from the complex data information. Facing with the analysis of big data, we will be more easily to respond to the needs of users have not yet expressed. This active response will also be reflected in risk avoidance, the movie "Minority Report" is actually a story triggered by risk avoidance. Similarly, around us, Alipay is using machines to learn what is criminal behavior. The machine can easily learn tens of thousands of fraudulent techniques, and even the smartest crooks are no match, and thus to protect the risk of Alipay. So it is up to the designer to learn to take advantage of the convenience and methods that come with such proactive response measures. As Professor Patrick Hoof says, design will be less about delivering on a user's request, and more about responding to the needs they haven't expressed yet.

Art design creators need to be diligent about updating their toolboxes. Nowadays, a large number of intelligent generation tools have been turned into intelligent scene artists, applied to image parsing, template creation, image synthesis and other fields, especially popularized in marketing application scenarios, greatly reducing design costs. Basing on cloud computing services, it is easy to achieve from improving the efficiency of public domain traffic to the expression empowerment of merchants' private domain, and to meet the demand of sub-crowd refinement operation for the structured production of pictures as the scenes are segmented. Even millions of real-time demands can be driven by technologies such as artificial intelligence visualization tools to meet the customized and personalized needs of customers. Such tools and cases are no longer rare, and experiments and results of artificial intelligence in the field of image design are becoming more and more abundant, like IBM's Watson giving the sci-fi movie Morgan a trailer cut. With the continuous progress of computer deep learning algorithms, getting closer to the process of human brain thinking, the designer's toolbox will also be enrich and update.

Art design creators need to actively face cross-disciplinary collaboration. As the scope of art design expands and the means diversify, it has broken through the traditional experience of visual creation, and we will face the creation of integrated experiences and cross-border design. The future of design will also face a huge revolution in the way it collaborates. Big data, computing power and various new tools are enabling us to quickly transition to the future of design and collaboration. With the continuous application of new technologies in the field of art design, the methods and rules of creation will also change dramatically. For example, in the field of digital interactive art, the "five senses" of the human being will require that visual interaction alone is not enough. Because User Interface design we are faced with is breaking through the visual itself, and bringing more content integration, or it can be said that UI is also iterating to XUI stage. As designers, we should be a force for collaboration and boundary crossing, and our creative practice requires us to face all the senses for integrated design.

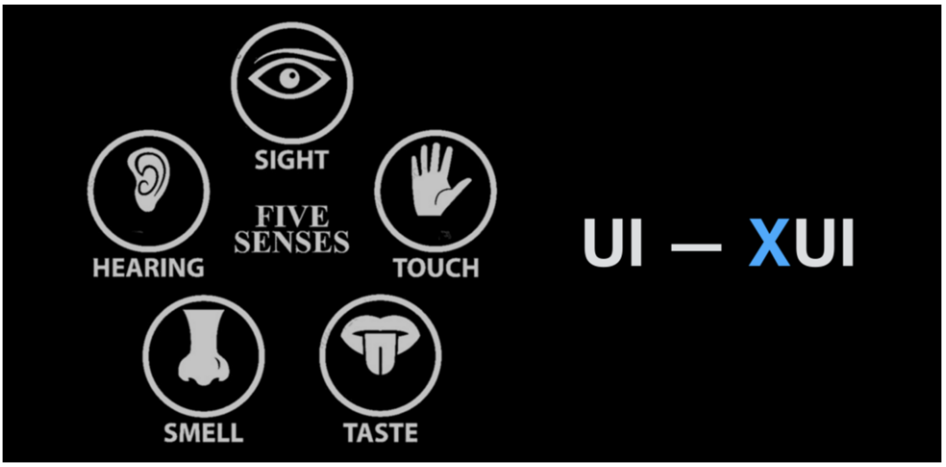

Figure 3. Five senses.

Art design creators need to focus on the depth of the experience. Inspiration and sensibility in our daily lives are not clearly explained by data, so machines that speak logically also have a tedious and uninteresting side. The field of art design will continue to need high-level, creative talent, and it will still be difficult for artificial intelligence to create art. Because art requires the ability to create thinking, not always rational and logical, the human being as the subject of use, experience is our origin. For example, the creation of Taobao's unique "Qin" cultural concept is still human, and artificial intelligence is based on such an innovative point of continuation and expansion. Here, the user experience is the core goal, the technical means is not the purpose, but the means to achieve our purpose. Therefore, good intelligence should be "invisible intelligence", allowing users to focus on the experience rather than the technical appearance. Nowadays, to dig and think about the experience, we need to break through the traditional design thinking, because what we face will not only be design, but the problem of being a new man of the times.

4. New scenarios and experiences

Of course, no matter how artificial intelligence develops, how to empower art design, how we collaborate or use it, in our specific design and application, it is still necessary to start small and build trust between human and machine as the first step. For example, my grandmother is one hundred and two years old, but also has a strong interest in new things, when she found a voice speaker like Tmall Genie can talk, she began to learn to ask about the weather forecast and order songs, and trust is thus established. So I believe that an artificial intelligence product will bring more application scenarios because of the establishment of trust.

The Apollo moon landing is a transcendence and reshaping of the human experience, and for art design, Nowadays, artificial intelligence is making a breakthrough and reshaping of the visual experience as well. Of course, there are many uncertainties and unanswered questions in this transformation process: How will it change business? Will it "remove" manual labor from design work? Will it replace design firms? These are all

questions that deserve continue exploration and reflection. Today, technology is accelerating, and we can clearly feel the "reset" of life in the seduction and coercion of technology. In the face of artificial intelligence, we will also be in a dilemma and contemplation, whether it will be "not only a crisis of art design, but also a crisis of human beings," as the philosopher Antonio Negri said. All these will be answered gradually in the exploration and practice.

(Results of Design-AI Lab, China Academy of Art)

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