Cross Border Integration of Art Design and Artificial Intelligence

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Abstract. Artificial intelligence technology has made remarkable achievements in driverless, security, smart city, image recognition, natural language processing, etc. Artificial intelligence is compared with human brain; these applications are all in pursuit of higher, faster, stronger and more accurate “left brain” category. To achieve human-computer cooperation, it is necessary to extend the right brain of artificial intelligence with sense of space, image, imagination and creativity, so as to make the machine more friendly and warm. AI is a system with intelligent decision as its core. AI thinking is a way of thinking to improve efficiency and human life through the application of artificial intelligence technology.

1. Introduction
The "cross-border integration" of art design and artificial intelligence has flourished in the past three years, which can be used as an effective way to expand the exploration of artificial intelligence, that is, design artificial intelligence. AI is a system with intelligent decision-making as the core. It can connect new technologies like 5g in series. The application of these technologies will greatly improve the production efficiency, thus triggering new changes and overturning the existing forms. At present, the mainstream AI technology is realized through machine learning. In short, machine learning is a process of finding rules in continuous learning and training, so it is more like natural science. Natural science is the study of things that have rules to follow. This shows that design AI has developed from advertising to graphic design fields such as font, logo, web page, chart, interface, and even to product, architecture, interior, clothing, printing, game, and film and television design fields.

2. AI is a System with Intelligent Decision as Its Core
With the rapid development of digital economy, the ecology of art and design has changed dramatically. The Internet industry, represented by e-commerce, has generated 3-4 million design jobs in a short period of time, among which the main work is to complete a large number of fast, conversion oriented graphic, video and interactive content. In this regard, the realization of man-machine cooperation is of positive significance. Natural science mainly studies "unconscious behaviour". One or some events lead to behaviour, such as knee jerk reaction. Natural science includes physics, chemistry, biology, astronomy and meteorology, while social science studies "conscious behaviour", such as psychology, sociology and anthropology. Natural science and social science are mentioned here to cover a relatively wide range of issues and areas that AI may involve. Conscious behaviour will destroy the objective law and affect machine learning. Artificial intelligence is a system based on probability theory. We should try our best to improve the accuracy of artificial intelligence decision-making, for example, to 99.9%, 100% is impossible, and that is the problem of...
automatic solution. The thing that breaks the law is the dirty data that reduces the accuracy of artificial intelligence, but there is no conscious behaviour in natural science.

2.1. Design History and Information
Throughout the history of design, its subject evolution is closely related to the development of technology. 100 years ago, the modern design founders represented by Bauhaus had been thinking about the automation of design as methodology. Unlike many conservative voices criticizing industrial standardization, Bauhaus even praised industrialization and standardization as a cultural symbol and aesthetics. Industrialization and standardization have not become the enemy of creativity, but a new source of design inspiration with epoch-making significance. Therefore, Bauhaus has become a design classic that later generations relish.

![Diagram of the Turing test](Test de Turing.jpg)

**Figure 1.** Diagram of the Turing test. This file was derived from: Test de Turing.jpg

2.2. Cross Border Integration
How to promote the cross-border integration of art design and artificial intelligence, I put forward two concerns: first, strengthen efforts to establish the "data" foundation of art design, and use the form of data to structure and precipitate the design professional knowledge. The image data set we constructed helps the computer to have "vision", and releases computer applications based on vision, such as face recognition, unmanned vehicle, etc. Now, we also need to establish an image data set in the field of design, so as to release the design ability of human-computer cooperation. Secondly, it is more necessary to construct the ability and knowledge of artificial intelligence in art design discipline, introduce artificial intelligence aided design, let designers use new technology flexibly, and form a greater creative leverage. In addition, for the training of application-oriented designers, it is necessary to sink the education of design artificial intelligence into the application-oriented colleges of art design, and explore more possibilities for the role of designers in the era of artificial intelligence.

2.3. Artificial Intelligence can Also See
Just as people have the ability to see things, so can AI.
In other words, machine vision, including image recognition, video recognition and text recognition, how to realize recognition?
Let's take image recognition as an example. Image recognition is to divide a picture into many small pieces (pixels), and then compare it with the known things of the machine to determine what the objects are. For example, the machine already knows what a cat's eyes, ears, mouth and nose will look like after being divided into small pieces. When a new photo is given to the machine, it finds that the new photo will look the same after being divided into different parts of the previously defined cat. Then the machine will output that this is a cat. So as to complete image recognition.
The common application field of machine recognition is intelligent security. For example, when we checked in at Beijing railway station, the first time was for staff to manually verify the identity card, train ticket and other information of passengers are consistent. Now, it is solved by intelligent identification of camera. This greatly shortens the time for entering the station. The same applies to the police. In the traditional way, they need to check the surveillance video manually to find the suspect. Now through video recognition, the system can quickly find the suspect's video according to the photos provided by the police.

At present, the camera's collection mode is based on the way of human eyes. When the camera can collect in the way of machine, it will bring greater efficiency improvement.

2.4. Let Machines Learn to Analyze
How do we analyse what a person likes? One is to observe his behaviour; the other is to classify people, classify new friends into categories we know, and infer the possible preferences of this new friend according to the preferences of the known categories.
It's the same thing with artificial intelligence. In the first way, the machine will tag the user, for example, if the user's tag is entertainment gossip, science and technology, and the Internet, the machine can recommend the content of the corresponding category to the user according to the tag information; in the second way, the machine can classify the user by creating a user's portrait. If the user is a professional female in a front-line City aged 20-30, the machine can recommend according to the preference of the portrait.
Application scenario is the content recommendation and advertising precision marketing that we are often exposed to. But there are also problems with the recommendation system. It not only explores people's preferences, but also affects people's choices. When users see a kind of thing system, they will recommend the same kind of thing. More and more users see this kind of thing, which eventually causes data imbalance. If the user's initial behaviour is only disoperation or non-personal operation, the system helps the user to make decisions and cultivate the user's interest.

2.5. Decision Making Ability is the Core of AI
Decision making ability is the core of AI, but AI cannot make 100% accurate decisions. It is based on the law of historical data summary, and then through the zero sum game ability of the confrontation generation structure to achieve decision-making. (Countermeasure generation structure is a research direction of artificial intelligence)
Generally, areas where human beings cannot make optimal decisions are more suitable to be solved through AI. When evaluating the quality of the decision, we will consider the time cost and human cost of the decision.
In addition to the intelligent customer service mentioned in the second part, industrial manufacturing, medical and other industries also need excellent decision-making ability. Let's take the medical industry as an example. We mentioned that "areas where human beings cannot make optimal decisions are more suitable to be solved through AI", because the problems that human beings can solve will
enlarge the error rate of AI. For example, if a doctor can watch a tumour patient's film well, it is not meaningful to use AI. On the contrary, the error rate of AI will be magnified. But in the operating room, AI will be more efficient when it comes to whether or not the patient is bleeding and how to deal with it. At the beginning of bleeding, doctors may not be able to find and deal with it in time. In manufacturing industry, on the one hand, it needs rapid and relatively accurate decision-making to reduce losses; on the other hand, it also needs to solve the economic problems caused by the increase of labour cost. That's why manufacturing will be one of the main beneficiaries when the state proposes new infrastructure.

![Figure 3. Representing Images on Multiple Layers of Abstraction in Deep Learning. Sven Behnke.](https://en.wikipedia.org/wiki/Deep_learning#/media/File:Deep_Learning.jpg)

The debate about whether to apply AI on a large scale mostly occurs in the part of AI decision-making. In the field of driverless AI, the value of being unable to own has been a hot issue. A common case is when a child suddenly appears in front of the driverless car. At this time, AI may fall into the dilemma of whether to give priority to the life of the owner or the life of the passer-by. Some experts suggest that the values of machines can be trained according to the attitude feedback of others. Whether the problem can be solved effectively remains to be seen.

3. Artificial Design is a Recreation
The word "re" should be added to the creation here, because artificial intelligence acts on the basis of known information. At present, the creative behaviour of artists cannot be accomplished by machines. The robot writing we are exposed to and the poster made by Ali Laban is a kind of recreation. The essence of "recreation" of machine is a process of deconstruction and reorganization. Robot writing and poster are making use of existing split materials to splice new content according to our language and aesthetic standards. This kind of recreation has also been well applied in pharmaceuticals and new materials. Artificial intelligence develops new drugs by recombining the original elements and iterating experiments. Efficiency is much higher than that of human beings.

4. Conclusion
So far, we have understood the concept and application of universal AI. AI thinking is a way of thinking to improve efficiency and human life through the application of artificial intelligence technology. The industry to which this thinking is applied may overturn which industry.

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