



# Research on Innovative Thinking of Ceramic Art Design Based on Artificial Intelligence

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**Abstract:** At present, ceramic art based on artificial intelligence inherits the original rules of ceramic art creation, and at the same time breaks through the limitations of traditional ceramic art. This paper first analyzes the innovative thinking advantages of artificial intelligence in ceramic art design. Then, it expounds the influence of artificial intelligence on ceramic process design. Finally, it analyzes the performance improvement of artificial intelligence on ceramic art design.

**Keywords:** ceramic design, artificial intelligence design, performance improvement, structure type

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## 1. Introduction

The wide application of artificial intelligence design software in today's ceramic art design has brought new creative methods and art forms [1]. Artificial intelligence design has been more and more applied in the field of ceramic art design. In the ceramic design, the traditional manual and mechanized methods are transformed into high-tech auxiliary methods, which has made a greater contribution to the improvement of the ceramic design level. Of course, due to the need for rapid development of new products, further research on the application of artificial intelligence design in ceramic design is still necessary. Therefore, the study of ceramic art helps guide people's understanding of culture. For the design of ceramic art sketches, due to the participation of artificial intelligence, what was difficult to copy has become easy to copy, the original static ceramics have become dynamic ceramics, the original silent ceramics have become sound and light ceramics, etc. With the rapid development of artificial intelligence vision and 3D modeling technology, artificial intelligence ceramics has become a research hotspot due to its advantages of editability, time saving, labor saving, and material saving. Especially in recent years, with the increasing maturity of 3D printing technology, the demand for personalized customization of ceramic products has increased dramatically [2].

In the contemporary era of intelligence, open intelligent design systems can enhance the engagement between designers and customers, product manufacturers, and process learners. Effective innovation in material selection can help traditional ceramic art design. In addition, smart sensors such as 3D printing can be used to obtain more product design resources and effectively adjust the cost of product design materials. Smart technology can enhance the uniqueness of traditional artisan items by adding new smart features. In the process of ceramic art design, if surface modeling is required, 3D software is required. Generally speaking, in the process of ceramic art design, when designing complex shapes, most of them use 3D scanning tools to generate the shapes.

## 2. The innovative thinking advantage of artificial intelligence in ceramic art design

The development of artificial intelligence and the upgrade of mobile devices have created favorable conditions for the development of ceramic art in the context of artificial intelligence [2]. While artificial intelligence information technology and artificial intelligence technology provide more convenient creative conditions for ceramic artists, they should also do more work to protect the intellectual property rights of ceramic artists. Artificial intelligence technology can be used as a creative tool for ceramic artists, as efficient and fast modeling software can speed up the creative process. The development of artificial intelligence information technology and artificial intelligence also provides avenues for unscrupulous imitation and plagiarism. Driven by self-interest, plagiarism has become ubiquitous. Artificial intelligence can support and develop arts and crafts and knowledge-based design. Therefore, a simulation algorithm or some model can be used for job analysis. Artificial intelligence technology can be used as a publicity tool for ceramic artists. Whether it is artificial intelligence ceramics or physical ceramics, it can be disseminated and promoted through artificial intelligence. Ceramic artists can also post their work on AI, allowing more people to enjoy their work at home, thereby increasing the artist's profile. Ceramic artists can accept the audience's comments and suggestions on their works through artificial intelligence, so as to obtain new creative ideas and stimulate their own innovative power. In addition, as more and more ceramic artists show their physical

ceramics and artificial intelligence ceramics on AI, artists can browse the works of their peers on AI, communicate and learn from each other, which will promote the development of their skills and strengths Growing.

### **3. Design and impact of artificial intelligence on ceramic technology**

#### **3.1 Influence on traditional design methods of ceramic technology**

The relief decoration on ceramic handicrafts is generally processed by marking, engraving, printing and other methods to make ceramic handicrafts more hierarchical [4]. In the process of designing and producing such ceramic handicrafts, the professional skills and experience of the designers are highly demanded. Designers need to hand-paint and make by hand in the whole process, and the design and production process is complicated and difficult. The design and production of traditional ceramic craftsmanship pay more attention to the decorative part, and pay more attention to the processing of three-dimensional ceramics. In the era of artificial intelligence, ceramics can be scanned and post-processed by artificial intelligence, and become realistic characters in animation and game works. Artificial intelligence technology has changed the function and function of ceramics, making it no longer just a human art, but also a dynamic artificial intelligence art product that enriches the entertainment life of the public. Many ceramic art museums have combined artificial intelligence to realize the dynamic display of ceramics, using 3D model technology to display the artist's creative process of making ceramics, the historical background of ceramics, and the 3D restoration of damaged ceramic cultural relics.

#### **3.2 The impact of artificial intelligence on modern ceramic technology**

In the modern ceramic manufacturing process, artificial intelligence ceramic design is not limited by traditional ceramic design techniques [5]. The artificial intelligence ceramic design makes the style of the work distinct, increases the layering of the work, and is conducive to the construction of complex structures; it shows the modern geometric beauty of the finished product and creates the technical effect of hollowing out. The ceramic creation cycle is very long, the design and manufacturing process is very complex, and the design and manufacturing process is extremely cumbersome. The design and manufacture of ceramic handicrafts requires a long time and more financial support, and the professional requirements of designers are also very high. In the initial design stage of ceramic handicrafts, many modifications to the handicraft samples are required to achieve the best results. Compared with other handicrafts, the design and production process of ceramic handicrafts takes a long time, and the design and production workload is relatively large. Ceramicists will be more involved in the design process, focusing on the production of small proofs and drafts of ceramic handicrafts, but ceramicists will not participate too much in the production process. No matter how good the sample of ceramic handicraft is, the finished ceramic handicraft may not achieve the expected effect. The design of ceramic handicrafts is disconnected from the production process, which will have a negative impact on the shape of ceramic handicrafts.

### **4. The overall improvement of artificial intelligence on ceramic art design**

#### **4.1 The performance improvement of ceramic products by artificial intelligence**

In the design process, the practical value and artistry of ceramic technology should be considered, and artificial intelligence technology should be used as an aid to better design ceramic technology. In the design of ceramic craftsmanship, the use of artificial intelligence-aided design can incorporate modern elements and improve the quality, practicability and appreciation of ceramic craftsmanship. Designers have sufficient understanding of the processing laws of ceramic technology and the materials of processing tools and processes. As an inevitable trend in the future ceramic industry, artificial intelligence has indeed brought certain convenience to the creation and presentation of ceramics. However, as an ancient art form, the most important thing about ceramic art is the realization of the author's humanity and the integration of ideas. The creation of ceramics cannot rely entirely on machines, but more importantly, the participation and creation of people, who are the only shapers of ceramic thoughts and emotions. Artificial intelligence technology is widely used in the modeling design of ceramic art, which can assist the design of ceramic art surfaces. The application of the software can simplify the surface design and greatly reduce the error of the surface rate. The three-dimensional computer model can assist in the drawing of ceramic art, and use the affiliation between different parts to draw the sequential arc distance. When drawing section curves, you need to use tools such as arcs and curves.

In order to obtain the three-dimensional solid modeling of ceramics, a rotating modeling tool can be used, and then curve drawing and solid modeling can be performed on the round mouth. Analyze other details of the ceramic, and repair the damaged surface as soon as it is found. Using computer software to present the ceramic model, the visual effect presented can simulate the real ceramic, the ceramic display animation effect model is comprehensive, and the overall coordinated ceramic

appliance model is constructed. Grasp the characteristics of contemporary ceramic design from the aspects of form, color and decoration, and provide inspiration for the development of modern ceramic design. In addition, in terms of decoration, glaze decoration has become the mainstream, and a sense of rhythm can be seen in the patterns and cleanliness of vertical patterns. It can be seen that ceramic design has high aesthetic value and artistic characteristics in terms of shape, color and decoration. Through the thinking on the development of Chinese ceramic design, I hope it will serve as a reference for ceramic design craftsmen.

## 4.2 Artificial intelligence improves the design of ceramic products

Only by continuously strengthening design innovation and using modern technology to actively respond to the needs of the market and consumers can craft products continue to grow and develop. Objects can be shaped using smart technology to include features such as smart product information displays, voice, and automatic adjustments. The promotion of traditional handicrafts is a long-term development strategy, and a variety of ingenious and innovative technical means have greatly improved the design efficiency of traditional handicrafts. The structural quality and design of traditional craft products require flexible use of intelligent design platforms and supporting tool software in the intelligent era, which can be connected to the motherboard using various universal standard connector ports. In the design process of ceramic handicrafts, artificial intelligence technology also runs through the whole process, of which 3D printing technology is the most widely used. Combining arts and crafts with 3D technology can create unique glass crafts. Ceramic craft designers need to use 3D modeling software to create virtual digital models and use 3D printing technology to directly print the models.

In order to maximize economic benefits, the design and production costs of traditional process products can be greatly reduced. Ceramicists can use computer software to simulate various carving tools, and perform tedious operation steps such as cutting, carving, and polishing the basic outline of ceramics, thereby greatly improving the convenience of ceramic art creation. With the increasingly advanced digital modeling software, various fine textures, lines and patterns can be designed to make digital ceramics more realistic. Applying artificial intelligence to ceramic design can enable more efficient product development and design, and further improve the accuracy of ceramic design. This is not only conducive to the design of more new ceramic products, but also can break through the limitations of time and space through virtual display, better promote and disseminate products, and effectively save resources consumed in the design process. With the rise of artificial intelligence design and various three-dimensional simulation technologies, computer modeling technology and digital ceramic technology are gradually applied to the ceramic industry. The non-physicality of the design creation process is the most important feature of digital ceramic technology. Artificial intelligence technology provides an open platform for ceramic products, including scene design, multimedia post-processing, creative design, image design and human-computer interaction [5]. Ceramic craft design will have great concentration in the middle process of making works, which is the characteristic of ceramic craft design. Computer-assisted completion of network multimedia production, mass media, artistic creation and other work.

## 5. Conclusion

At present, the development and inheritance of the art field is influenced by the development of science and technology. Throughout the long history of the development of ceramic craftsmanship, it is found that the manifestations of ceramic craftsmanship in different times are different, and different factors restrict or promote the means and forms of artistic creation. With the widespread application of artificial intelligence technology in all walks of life, people's life, work and learning methods have gradually changed, and artificial intelligence technology has become more and more widely used in ceramic process design. According to the traditional design and production methods, the field of ceramic process design has gradually developed into a bottleneck. Artificial intelligence technology has brought new opportunities to the development of ceramic craft design, which can enhance the practicability and artistic charm of ceramic craft, and is loved by more people.

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