



Research on the surface art treatment of yacht based on AI artificial intelligence

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Abstract. This paper studies the surface art treatment of future personal yachts based on AI artificial intelligence, aiming at artificially leading the use of AI artificial intelligence technology to improve the art and use value of personal yachts. Firstly, this paper will introduce the application status and development trend of AI in art design. Secondly, through the analysis of the surface art treatment needs of personal yachts, based on deep learning algorithm, the design and surface art treatment methods of yachts based on AI artificial intelligence technology are proposed. Finally, this paper will evaluate the advantages and disadvantages of the surface art treatment method based on AI artificial intelligence technology, as well as the future development direction, so as to provide diversified options for future yacht design.

Keywords: Artificial Intelligence; Personal Yacht; Surface Art Treatment; Ship Design;

1 Introduction

Personal yacht is a luxurious leisure equipment. In the 21st century, as China's economy continues to rise and people's material needs are greatly satisfied, yacht culture has gradually emerged, with more and more people paying attention to, understanding and purchasing (renting) yachts. Meanwhile, yacht clubs, yacht tourism and other services have gradually developed, resulting in a huge market. In the design and decoration of personal yachts, not only functional considerations, but also artistic and personalized aesthetics must be taken into account. With the development of artificial intelligence technology, it is a great impact for all sectors. As a rapidly developing emerging thing, it brings opportunities and challenges. Especially for the art and design field, as artists and designers, they should use it as an excellent tool to seize opportunities and face challenges. Nowadays, more and more art and design fields begin to apply AI artificial intelligence technology. The trend of technology enriches the aesthetic rhetoric of design, and to some extent, reshapes the ideological awareness of human beings' aesthetic and evaluation of design. ^[1]This is of great significance to improve the surface artistic processing level, expression form and efficiency of personal yachts. Therefore, this

paper will explore the research on surface artistic processing of personal yachts in the future based on AI artificial intelligence, aiming to explore how to use AI artificial intelligence technology to enhance the artistic value and design level of personal yachts.

2 Surface art Processing Method Based on AI Artificial Intelligence Technology for Personal Yachts

2.1 The current situation and development trend of AI in art and design

With the continuous development of AI artificial intelligence technology, more and more art and design fields have begun to apply AI artificial intelligence technology. Among them, image processing technology based on machine learning and deep learning algorithms has attracted particular attention. Through training neural networks through deep learning algorithms, AI can generate art, construct models, analyze images and videos, and even create virtual reality worlds. For example, in the field of art and design, AI can help designers generate ideas quickly, optimize design schemes, and improve design efficiency. However, there are many challenges that designers face in the era of AI digital technology, mainly including the lack of cultural heritage, insufficient emotional expression, design lack of innovation, and challenges brought by new technologies. With the development of artificial intelligence technology, art and design creation is no longer the exclusive domain of professional art workers, nor is it only the work that designers can complete. Ordinary people can also use artificial intelligence technology to regard art creation as a profession. Everyone can use technology for artistic design creation, and the boundary between designers and ordinary people is becoming increasingly blurred. [2] However, this does not mean that artificial intelligence is bad. On the contrary, it is a challenge and an opportunity, and its development potential is extremely huge.

2.2 AI requirements and surface art processing needs in personal yacht design.

AI can play an important role in the design and surface art processing of personal yachts, mainly in the following aspects.

2.2.1 Functional aspects of hull design: Personal yachts need to have good navigational performance and stability to ensure the safety and comfort of crew and passengers. AI can use deep learning algorithms to study a large number of yacht shapes, generating innovative and aesthetically pleasing hull designs. Additionally, AI can design personalized yacht according to user preferences and usage scenarios.

2.2.2 As for material selection: AI can provide material selection solutions for yacht designers by analyzing material performance and appearance characteristics. For

example, based on the usage scenario and performance requirements of the yacht, AI can recommend suitable material types and thicknesses to meet the following requirements:

Durability: personal yachts need to withstand the test of seawater corrosion and harsh weather therefore surface treatment should use materials with strong waterproof, wear-resistant and corrosion-resistant properties.

Easy maintenance: personal yachts need to be maintained and serviced regularly, so surface treatment should be as simple and easy as possible to reduce maintenance costs and time.

2.2.3 In terms of surface art processing: AI can use image processing algorithms to perform art processing on the surface of yachts, such as converting images or patterns provided by users into patterns that are suitable for yacht surfaces. In addition, AI can generate surface processing solutions with artistic sense according to the design style of the yacht and the user's needs, meeting its aesthetic requirements. As a luxury leisure device, personal yachts should reflect the characteristics of luxury, fashion and Personalization in their exterior design, in order to meet the aesthetic needs of the boat owner.

2.2.4 In terms of performance optimization: AI can analyze the hydrodynamic characteristics of yachts and optimize their sailing performance. For example, AI can simulate the sailing conditions of yachts under different wind speeds and wave heights, providing designers with optimization solutions.

2.2.5 In terms of automated production: AI can achieve the automation of yacht production by optimizing the production process or designing the hull shape. For example, AI can automatically generate production processes and tools based on yacht design drawings, thereby improving production efficiency and quality.^[3]Overall, AI has important application prospects in the design and surface artistic processing of personal yachts, providing designers with more innovative ideas and optimization solutions, and making it easier to achieve fine-grained analysis.^[4]

2.3 Surface art processing method based on AI technology

Currently, AI has made significant progress in various fields such as "AI + art", "AI + design", "AI + music", "AI + painting", "AI + calligraphy", "AI + image processing", "AI + media", and "AI + film and television".^[5]Through keyword search of the above keywords, it can be analyzed that the surface art processing method based on AI technology mainly includes the following steps:

Data collection: Collect image datasets of different types of artworks and personal yachts as the data source for training the model.

Model training: Use machine learning algorithms and deep learning techniques to train neural network models to learn the features and style of artworks and apply them to the surface art processing of personal yachts.

Style transfer: Use the trained neural network model to transfer the style of artworks to the surface processing of personal yachts to achieve personalized art processing effects.

Optimization and adjustment: Optimize and adjust the surface processing effects according to actual requirements to meet the design requirements of personal yachts.

Through the above steps, the surface art processing method based on AI technology can achieve personalized, efficient, and accurate surface processing effects, thereby improving the artistic value and design level of personal yachts.

3 Surface art Processing Procedure Based on AI Artificial Intelligence Technology

3.1 Based on AI deep learning algorithms

AI deep learning algorithm is a type of machine learning algorithm based on neural networks, which can be used to process large amounts of complex data such as images, audio and natural language. ^[6]Here are some common AI deep learning algorithms:

Convolutional Neural Networks (CNN): mainly used for image and video processing, can automatically extract features in images, such as edges, textures, and colors. ^[7]

Recurrent Neural Networks (RNN): mainly used for processing sequence data such as speech and text. RNN can automatically memorize previous states to predict current states.

Autoencoders: mainly used for data compression and feature extraction. Autoencoders can compress high-dimensional data into low-dimensional data and extract important features from the data.

Generative Adversarial Networks (GAN): mainly used for generating new data such as images, audio, and video. GAN can generate highly realistic and creative data through adversarial training.

Deep Reinforcement Learning (DRL): mainly used for intelligent decision-making and control. DRL can optimize decision-making and control strategies through continuous trial and error learning, achieving autonomous learning and decision-making.

These are some common AI deep learning algorithms, each with its own unique application scenarios, advantages, and disadvantages. In practical applications, it is necessary to choose the appropriate algorithm for processing based on the specific problem and data characteristics.

3.2 The specific process is as follows

3.2.1 Data collection and processing.

It is necessary to collect various images of artworks and personal yachts, and pre-process and annotate them. These data will be used as the data source for training the model.

3.2.2 Image recognition and analysis.

Using machine learning algorithms and deep learning techniques, train neural network models to learn the features and styles of artworks. [8] Then, recognize and analyze the surface images of personal yachts, and extract their features and structural information.

3.2.3 Artistic style transformation and optimization.

By transferring the style of artwork to the surface treatment of personal yachts, personalized artistic processing effects can be achieved. At the same time, the surface processing effect is optimized and adjusted according to the actual situation to meet the design requirements of personal yachts.

3.2.4. Color adjustment and rendering.

For the surface processing effect of personal yachts, perform color adjustment and rendering. By adjusting the color and lighting effects, the surface processing effect is more realistic, natural and beautiful.

3.2.5. Design display and evaluation.

Show and evaluate the results of surface artistic processing based on AI technology. Virtual reality technology can be used for display to help yacht owners and designers better understand the surface processing effect. At the same time, the advantages and disadvantages of the surface processing effect can be evaluated, and improvements and optimizations can be made.

Through the above process, the surface artistic processing method based on AI technology can achieve efficient, accurate, and personalized surface processing effects, improve the artistic value and design level of personal yachts.

4 Analysis of the Advantages and Disadvantages of personal Yacht Design and surface Art Processing Methods Based on AI Technology

4.1 Analyses of advantages

According to the assumed integrated technological case, we know that:

High automation: The surface art processing method based on AI technology can quickly generate a large number of design solutions, improving design efficiency and output.

Strong innovation: AI technology can create new aesthetic artworks that meet the standard of beauty and have uniqueness and innovation. [9]

Good adaptability: AI can continuously optimize design solutions based on user feedback and requirements, meeting the needs of different users. [1]

Reduced cost: The surface art processing method based on AI technology can reduce labor and material costs, improving efficiency and profits.

4.2 Analyses of disadvantages

High requirements for data quality: The surface art processing method based on AI technology needs a large amount of data support with high quality. Otherwise, it will affect the design effect and quality.

Lack of human aesthetics: Although AI can simulate human aesthetic standards, it lacks human subjective consciousness and emotional experience, making it difficult to reach the level of human aesthetics.

Technological limitations: Current AI technology still has some limitations, such as limited ability to handle complex graphics and colors. Therefore, there is a need for continuous technological innovation and breakthroughs.

4.3 Future development directions

Improving data quality: In the future, we can collect more accurate and abundant data to improve the design effect and quality based on AI technology.

Integrating human aesthetics: In the future, AI technology can be combined with human aesthetics to form a new design model that not only has AI's automation and innovation but also human subjective consciousness and emotional experience.

Expanding application fields: In the future, the surface art processing method based on AI technology can be applied to a wider range of fields such as architecture, home, and clothing, meeting people's needs for beauty and aesthetics.

Improving technical capabilities: In the future, we need to continuously improve the AI technology's processing capabilities and speed to meet the higher design requirements and efficiency demands.

In conclusion, the surface art processing method based on AI technology has broad development and application prospects, but it also needs to overcome some technical and application limitations and challenges.

5 Conclusion

Whenever new technology appears, it will inevitably be accompanied by "opportunities and challenges." Nowadays, when evaluating a work completed by a robot, humans tend to use a series of terms such as "stiff," "lacking in spirit," and "ignoring humanity" to assess the design from a human-centric perspective. This is a more one-sided view, as this technology is driven by humans and changes according to human subjective consciousness. Humans will not disappear completely as the subject of mankind, as portrayed in movies. Instead, humans will eventually be assimilated by non-biological intelligent entities and become "vassals" of machines. ^[10]

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