

Exploring the Impact of AI Painting on Traditional Chinese Art: Opportunities, Challenges and Future Directions

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Introduction

In recent decades, with the rapid development of the economy and the improvement of people's living standards and aesthetic abilities, both Chinese painting and Western oil painting have shown new vitality. Traditional Chinese painting continues to advance and develop with vigorous vitality. As a traditional painting genre, it has been inherited and carried forward by countless literati throughout history. As a way of expressing interests and feelings, Chinese painting is clearly an interaction between the painter's spiritual and thinking activities. With thousands of years of inheritance and innovation, the ever-evolving Chinese painting has come to represent the traditional cultural genes of the Chinese people. The involvement of contemporary AI and VR new media art and its integration with traditional painting forms have provided artists worldwide with creative ideas different from previous forms, reconstructing traditional painting art under the mapping of technology. Artificial intelligence, through imitating the linear modeling, coloring, and brushwork effects of traditional Chinese painting, creates a sense of technology. By inputting a few keywords, AI can perform secondary creation with the thinking of modern people. Due to human involvement and refinement, the final product is selected, thus achieving effects beyond the reach of hands. Nowadays, the

intervention of technology in traditional painting has become widespread and has even formed a tacitly acknowledged creative method among some groups of painters to a certain extent. This is the most prominent feature of contemporary art creation. Whether AI painting will replace the creation of artists is a key issue that needs to be addressed urgently. This paper analyzes and researches numerous cutting-edge works, and its research results have guiding and reference significance for the development direction of contemporary Chinese painting.

The concept of "AI painting" in this study specifically refers to artwork generated using deep learning algorithms, as defined by Huang and Chen in their influential paper "AI Art: Concepts, Techniques, and Implications." They state that "AI painting is a form of computational creativity that leverages machine learning models, particularly generative adversarial networks (GANs), to produce novel visual compositions mimicking various artistic styles and techniques" (Huang, Chen 2022: 3). This definition highlights the key role of AI algorithms in the creation process, distinguishing it from traditional human-created artworks. On the other hand, "traditional Chinese painting" encompasses a broad range of artistic expressions deeply rooted in China's cultural heritage. As noted by Cahill in his seminal work "Chinese Painting," traditional Chinese painting is characterized by its emphasis on brushwork, ink wash techniques, and philosophical underpinnings (Cahill 1983: 15). It includes various genres such as landscape painting (shan shui), flower-and-bird painting (hua niao), and figure painting (ren wu), each with its unique aesthetic principles and symbolic meanings.

The impact of AI painting on traditional Chinese painting has been a topic of growing interest in recent years. For instance, the AI-generated artwork "Landscape in the Style of Xu Beihong" created by the Chinese tech company Tencent AI Lab in 2019 sparked widespread discussions about the potential and challenges of AI in the realm of traditional art (Liu 2019). The piece, which successfully mimicked the style of the renowned Chinese painter Xu Beihong, raised questions about authorship, creativity, and the future of artistic practices in the age of AI. As the development of AI painting continues to accelerate, it is crucial to examine its implications for the inheritance and innovation of traditional Chinese painting. This study aims to contribute to this ongoing discourse by providing a comprehensive analysis of the opportunities and challenges presented by AI painting, as well as offering insights into the future trajectories of Chinese painting in the digital era.

Research Objectives

The research objectives of this paper aim to explore the development direction of contemporary Chinese traditional painting forms by clearly sorting out the

development context of Chinese traditional painting from the lengthy works of predecessors. The study will focus on the impact of AI painting on traditional Chinese painting, examining the changes in creative concepts, aesthetic characteristics, and dissemination methods brought about by this emerging art form. Specifically, the research will address the following questions:

1. How has AI painting influenced the creative process and artistic expression of traditional Chinese painting?
2. What are the aesthetic similarities and differences between AI-generated Chinese paintings and human-created works?
3. In what ways can traditional Chinese painting learn from and integrate the techniques and styles of AI painting?
4. How has the rise of AI painting challenged the established notions of authorship, originality, and creativity in the context of Chinese art?
5. What are the potential future directions for the development of traditional Chinese painting in the era of AI?

To answer these questions, the study will analyze the works of contemporary masters and prize-winning works from national art exhibitions, supplemented by paintings from regional schools such as the Central Plains Painting School and the Lijiang Painting School. By comparing the images presented in different regions, the research aims to identify the diverse artistic responses to the impact of AI painting. In terms of theoretical literature, the study will extensively review the writings of contemporary art critics both in China and abroad, such as Liu Xilin, Huang Zongxian, Xu Jiang, Zheng Gong, Chen Ming, among others. Their insights will provide a foundation for understanding the development of contemporary Chinese painting and the challenges it faces in the age of AI. The research will also draw upon the theoretical works of leading scholars in the field of AI art, such as Manovich's (2018) "AI Aesthetics" and Zylinska's (2020) "AI Art and the Future of Creativity." These texts offer critical perspectives on the ontological and epistemological implications of AI-generated art, which will inform the analysis of AI painting's impact on traditional Chinese painting.

Literature Review

In recent years, with the rapid development of AI technology and the increasing popularity of AI painting, significant achievements have been made in various fields involving artificial intelligence. Under the vision of emerging AI painting art, current research on "the impact of AI painting art on traditional Chinese painting" tends to focus on three aspects. Firstly, there are articles and monographs that provide an overview of new media art and AI art, explaining their concepts and significance.

However, such articles are mostly introductory and explanatory, with limited length and relatively superficial content. Secondly, in-depth case studies are conducted on traditional Chinese painting works under the influence of new media art. These studies align with the current development direction of traditional Chinese painting art and reflect on the inheritance and development of Chinese painting in the contemporary context. Thirdly, comparative studies are carried out to introduce the cultural attributes, aesthetic attributes, and development trends of AI painting and traditional Chinese painting. However, due to the numerous AI painting works, the development of literature and monographs is not entirely synchronous with the artworks. There is a lack of comprehensive research covering multiple aspects such as historical origins, cultural connotations, and aesthetic characteristics, resulting in incomplete and insufficient understanding of this type of research.

In the category of academic papers, Li (2023) explains that the intervention of digital technology has enriched the elements of traditional Chinese painting and made it more in line with modern aesthetics. Zhang (2020) uses a comparative approach to sort out the differences between new media art and traditional art, identifying the source-and-flow relationship between them. However, the paper does not make predictions or projections about the future of traditional Chinese art. In Wang's (2017) "Research on Art Mediation in the Digital Age," Chapter 4 introduces the characteristics of artistic media in the digital age, suggesting that technology reshapes reality and liberates artistic creativity. The author analyzes the impact of art mediation in the digital age, presenting the arguments of two opposing groups, and tends to agree with the optimistic view that new media technology will comprehensively affect human senses. However, the impact on traditional Chinese painting is not extensively discussed. In the category of journal articles, a search for the keywords "AI art" and "artificial intelligence painting" on CNKI (China National Knowledge Infrastructure) reveals a growing interest in the close integration of technology and art. Shang (2010, 2012, 2015) discusses the influence of new media on contemporary art and proposes that new media provides equal opportunities for artistic participation, creation, and consumption, making "everyone an artist." These articles analyze the impact of new media art on real life using specific examples. Shang (2015) also addresses the question of "how to understand the contemporaneity of art" in the context of the "value dilemma" faced by Chinese art, suggesting that it is necessary to establish connections based on the profound cultural heritage of traditional art to ensure a more positive development of contemporary art. Ge (2023), Yao and Xiao (2023), Zuo (2019), Wu (2023), and Wu (2015) all hold positive attitudes towards new media art and AI painting, believing that they represent the trend and direction of Chinese painting development. They argue that the perfect integration of technology and art has opened

a new chapter for Chinese painting, providing new channels for the inheritance and development of traditional Chinese painting. However, some critics have also expressed concerns about the rapid development of new media art and AI art. Duan et al. (2023) and Dai (2023) mention that AI painting cannot replace human aesthetic thought and discernment, and if human aesthetic activities are not required, it loses its meaningful significance.

Current research on the impact of AI painting art on traditional Chinese painting mainly focuses on historical background, cultural connotations, inheritance, and innovation. These research results provide reference and inspiration for the present study and lay a theoretical foundation for further discussion. However, it is important to note that many of the existing findings are fragmented and isolated analyses, lacking in-depth and targeted research on AI painting. Therefore, this paper aims to build upon the existing research and use the method of artistic practice to further investigate the characteristics and influence of AI painting art. On this basis, suggestions for the development and protection of contemporary traditional Chinese painting will be proposed, with the goal of inheriting and innovating Chinese painting works.

Research Methodology

4.1 Image Analysis Method

The study will employ the image analysis method to compare and contrast traditional Chinese paintings with AI-generated artworks. By collecting and examining the works created by contemporary artists using computer technology and comparing them with traditional Chinese paintings, the research will identify the differences in artistic forms. The analysis may focus on specific aspects of classic traditional Chinese paintings and AI artworks, such as composition, brushwork, color, and other elements, to provide a more targeted comparison of the creative processes involved.

4.2 Inductive Classification Method

The inductive classification method will be used to categorize and summarize the different attitudes and perspectives on the future development of contemporary traditional Chinese painting. This will involve reviewing the writings and monographs of predecessors and masters in the field, extracting and comparing their views on the prospects of traditional Chinese painting in the context of AI art development. The study will analyze the differences in their theories and examine specific cases and artistic phenomena to support the analysis. Given the long time span and the impossibility of covering every detail, the research will focus on analyzing the existing literature and works of a specific period. Based on this foundation, the study

will put forward original ideas and insights, aiming to contribute new perspectives on the most pressing and cutting-edge issues in the art world today.

4.3 Case Study Method

The case study method will be employed to conduct in-depth investigations of representative contemporary AI artists and their artworks. The study will select two to three AI artists with typical and influential works, and design interview outlines based on their representative pieces. The interviews will revolve around the following questions:

- a) Is AI painting considered art?
- b) What are the differences between AI painting and traditional painting forms?
- c) Can AI painting replace traditional manual painting?

By focusing on these three aspects during the interviews, the study aims to capture relevant information and collect pertinent materials promptly. The interviews with artists will be used to substantiate the research findings and enhance the persuasiveness of the arguments presented. Detailed interview records will be maintained to ensure the accuracy and reliability of the data collected. In addition to the above methods, the study will also consider employing other research techniques such as questionnaire surveys, field observations, and statistical analysis, depending on the specific needs and feasibility of the research process. The combination of multiple methods will help to ensure the comprehensiveness and depth of the study, providing a solid empirical basis for the conclusions and recommendations put forward.

Expected Results:

5.1 Anticipated Problems

During the research process, the following problems may be encountered:

Problem 1: Due to the vast scope of the literature and the large time span involved, there may be limitations in accessing and collecting data from databases and papers. The research process may not be able to cover every detail, leading to a lack of depth and subjectivity in the analysis, which could affect the quality and academic rigor of the study. The challenge lies in how to make the research findings more forward-looking and put forward original viewpoints.

Problem 2: When using the interview method, there may be difficulties in coordinating the time and location with the artists, resulting in communication barriers that could impact the effectiveness of the interviews. The design of the interview questions may also be suboptimal, failing to elicit the most relevant and insightful responses from the interviewees.

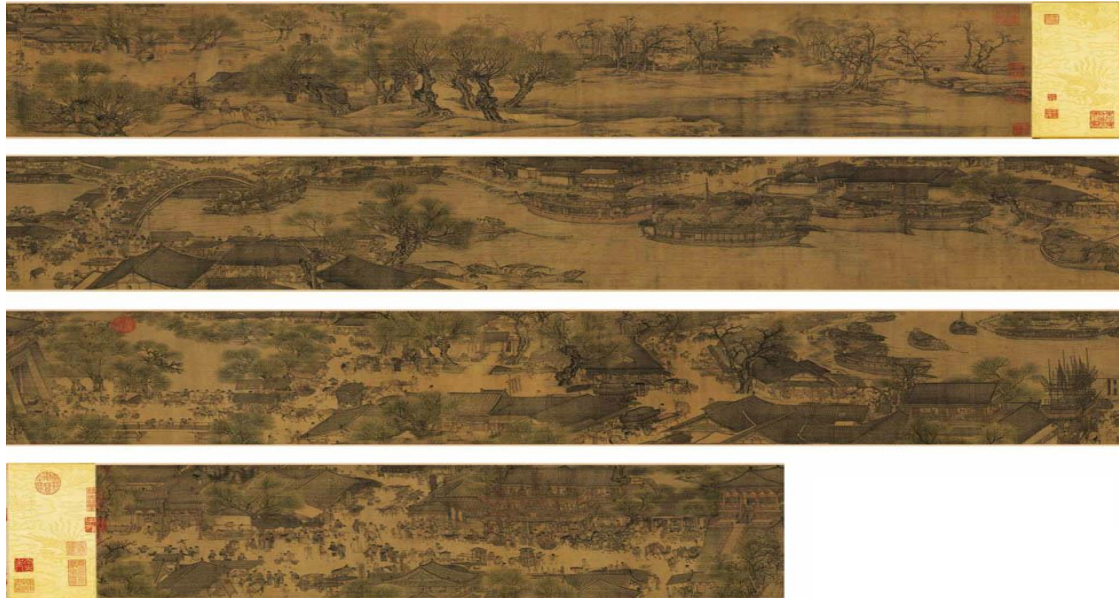


Fig.1 "Along the River During Qingming Festival" (Original)



Fig.2 "Along the River During Qingming Festival" (Digital)

5.2 Solutions

To address the anticipated problems, the following measures are proposed:

Solution 1: Collect and review literature from multiple sources and disciplines to ensure diversity and comprehensiveness of the data. Employ a combination of research methods to overcome the limitations of relying on a single approach.

Regularly update the research progress and stay informed about the latest developments and findings in the field to maintain the currency and relevance of the study. Formulate a clear and focused research question to guide the analysis and interpretation of the data, ensuring that the conclusions drawn are substantive and original.

Solution 2: Develop a detailed interview outline and carefully select the interviewees based on their expertise, representativeness, and relevance to the research topic. Conduct thorough background research on each artist's work and prepare targeted questions that probe into the key issues and themes of the study. Establish rapport with the interviewees and create a conducive environment for open and honest dialogue. Ensure that the interview data is accurately recorded, transcribed, and analyzed in a systematic and rigorous manner.

4.3 Research Findings

Through a systematic review of the literature and a comparative analysis of traditional Chinese paintings and AI-generated artworks, this study is expected to yield the following findings:

a) AI painting offers a convenient and efficient means of artistic creation that can closely mimic the media and techniques of traditional Chinese painting. The use of AI technology in artmaking has become increasingly popular and represents a major trend in the development of Chinese painting.

b) Despite the technical advances, AI-generated artworks still differ from traditional Chinese paintings in terms of artistic conception, emotional expression, and cultural connotations. The involvement of human artists remains crucial in guiding the creative process and imbuing the works with deeper meanings and aesthetics.

c) The rise of AI painting has posed both opportunities and challenges for the development of traditional Chinese painting. While AI technology can help to popularize and disseminate Chinese painting to a wider audience, it may also lead to a homogenization of styles and a loss of individuality in artistic expression.

d) To navigate the impact of AI on traditional Chinese painting, it is necessary for artists, researchers, and policymakers to adopt a critical and reflective approach. This involves exploring innovative ways of integrating AI technology with traditional artistic practices, fostering dialogue and collaboration between AI and human artists, and developing ethical and legal frameworks to regulate the use of AI in the art world.

Research Significance

6.1 Theoretical Significance

This study attempts to expand the theoretical paradigm of AI painting art development. Currently, as an emerging art industry, AI painting art research mainly

focuses on ontological studies. By extending the time span and conducting extensive comparative research, this study aims to provide a comprehensive and systematic examination of contemporary AI painting art. It seeks to address the limitations of previous studies and contribute to the theoretical research materials on AI painting art, deepening, and elevating the research on contemporary Chinese painting art. The study's theoretical significance lies in its potential to construct a new analytical framework for AI painting art research. By systematically investigating the AI painting art system and exploring the relationships and reference models among its internal elements, the study aims to develop a deeper understanding of how traditional Chinese painting works influence and maintain the balance of AI painting art development within the system. It also seeks to examine how the system adjusts and adapts to changes in the external social environment, ultimately leading to the evolution and development of AI painting. The research findings are expected to provide practical exploration and policy basis for building a balanced and coordinated traditional painting system and achieving its sustainable development. This has important theoretical implications for the inheritance and promotion of traditional Chinese painting works.

4.2 Practical Significance

Firstly, the study attempts to establish a new analytical framework for AI painting art research, which can serve as a reference for future investigations in this field. By conducting a comprehensive and systematic examination of AI painting art development, the study aims to shed light on the intricate relationships and reference models among various elements within the art system. This framework is expected to contribute to a deeper understanding of how traditional Chinese painting works influence and maintain the balance of AI painting art development, and how the system adapts to changes in the external social environment. The findings can provide practical insights and policy recommendations for building a balanced and coordinated traditional painting system and promoting its sustainable development. Secondly, the study aims to explore the feasibility of interdisciplinary integration between AI painting art and traditional Chinese painting. The convenience, efficiency, flexibility, and controllability of AI digital painting make it well-suited for application in various fields, including education. Therefore, the intersection and integration of AI digital painting with university curriculum have practical feasibility. The study's findings can serve as a reference for incorporating AI painting art into the teaching of traditional Chinese painting, promoting innovation in artistic education. Moreover, the study seeks to investigate the development prospects of AI painting art and its potential impact on the inheritance and innovation of traditional Chinese painting. By examining the opportunities and challenges brought about by AI technology, the

research aims to provide insights into how traditional Chinese painting can adapt to the digital age while maintaining its cultural essence. The findings can inform the development of strategies and policies to support the sustainable development of Chinese painting in the context of technological advancement.

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