The Transformation of Photography by Artificial Intelligence Generative AI Technology

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Abstract: With the development of technology, the art form of artificial intelligence generative AI technology, created through code, has become a new form of artistic creation. The advancement of computer technology has expanded the creative dimensions of AI generative technology from two-dimensional to three-dimensional, and further enabled effective cross-fusion with various artistic media. This not only brings new modes of artistic expression for creators but also offers a fresh experience for viewers. This paper analyzes the application of AI generative AI technology in image-based artistic creation, elucidates the contemporary value of photographic art's essential language, discusses the impact of intervention by new imaging techniques on photographic art, and further explores the potential development of photographic art in the era of artificial intelligence.

1. Introduction

The advent of AI generative technology has ushered in a new paradigm for artistic creation, introducing limitless possibilities. Through the utilization of computer algorithms and artificial intelligence, artists are granted enhanced inspiration and a broader spectrum of choices.

Technological transformation has resulted in a shift in creative thinking. Photographers, for instance, are no longer confined to merely documenting reality; instead, they can produce more imaginative works through the application of generative algorithms. This transformation allows photographers greater freedom to express their ideas and emotions, simultaneously fostering the evolution and reformulation of artistic concepts and facilitating the convergence and transformation between various media.

However, the involvement of AI generative technology also brings forth challenges and limitations. Firstly, there is the potential dissolution of aesthetic standards, which may disrupt traditional aesthetic norms and make it challenging to discern and evaluate aesthetic criteria within photographic art. Secondly, the disappearance of realism poses a concern. Moreover, there is a challenge to originality, as the use of generative algorithms may prompt reassessment and redefinition of the concept of "originality" in artistic creation, adapting to the new challenges and transformations brought about by AI generative technology. Lastly, the creative process involving AI generative technology necessitates addressing issues of regulation and copyright to ensure a healthy and orderly development.

2. Changes in Photography Following the Intervention of AI Generative Technology

The introduction of AI generative technology into the realm of photographic creation has led to significant transformations both in technical approaches and creative perspectives. Traditional photographic creation typically involves steps such as shooting, editing, and post-production, demanding a certain level of photography skills and post-processing techniques. However, with the integration of AI generative technology, artists can leverage computer algorithms and AI techniques to generate artworks, markedly reducing the technical barriers for artists. This liberation from the technical "black box" empowers creators, enabling a more inclusive participation in the creative process. Consequently, a greater number of individuals can engage in artistic endeavors, expressing ideas and viewpoints with increased freedom and spontaneity.

The technological revolution has brought about a shift in creative thinking, particularly altering the traditional approach to photographic creation that emphasized realism and objectivity, especially in domains such as documentary and news photography. However, the intervention of AI generative technology has disrupted this traditional paradigm in photographic creation. Photographers are no longer confined to merely capturing reality; instead, they can create more personalized and innovative works through the application of generative algorithms. This transformation allows photographers greater freedom to express their ideas and emotions, concurrently fostering the evolution and reformulation of artistic concepts.

An illustrative example of this transformative shift is evident in the art project "From 'Apple' to 'Anomaly'" by American artist Trevor Paglen. Installed in Barbican's Curve Gallery, the project comprises approximately 30,000 color photographs sourced from one of the primary datasets used to train artificial intelligence machine learning—ImageNet. Currently boasting over 14 million images and more than 21,000 categories, ImageNet serves as a significant source for AI training. Trevor Paglen's project exemplifies how AI technology can be harnessed to generate artistic expressions, pushing the boundaries of conventional artistic creation.

3. The problems brought about by AI technology

3.1 Aesthetic Dissolution

On one hand, the intervention of AI generative technology may accelerate the dismantling of aesthetic restrictions and barriers in traditional photographic creation, expanding the scope of aesthetics and fostering a more open-minded aesthetic appreciation. On the other hand, this intervention may blur the aesthetic standards within photographic creation, making it challenging to discern and evaluate. The different creative methods introduced by AI generative technology diverge from traditional photography, leading to distinct aesthetic standards that pose difficulties in assessment.

In the era of AI generative art, the definition of art undergoes deconstruction and reconstruction. The technological age has facilitated a shift in art from being elite-centric to a more widespread phenomenon. However, popularity does not necessarily equate to authority, and even with technology, the foundational concepts of traditional art are still crucial for support. Not every individual utilizing technology has a significant impact on art and its trends.

From a foundational logical perspective, media institutions using media as their cognitive logic repeatedly reproduce new media scenarios. Beneath the apparent glamour lies emptiness, incapable of expressing the essence or connotation of deep-seated patterns. "An interpretive activity aimed at approaching the truth infinitely, where time and space are torn apart into conceptual metacodes, and images may become projections of some kind of high-dimensional wisdom in the present" [1]. In the current aesthetic influence of AI generation and mass media, human cognition is trapped in

spectacles. We not only no longer know the truth but are also uncertain about what the truth is.

Artificial intelligence appears to liberate practice, simplifying operations, and open-source code breaks down industry barriers, allowing everyone to generate images. However, the generalization of these operations and the ease of emotional fulfillment might lead to a further weakening of aesthetics. "Technological artifacts, such as words, are a medicine: a kind of medicinal poison, and vice versa" [2]. In other words, under the call of inexpensive technology, the release of emotions can be as simple as a few taps on a screen. "Just as we thought that the things we hate would destroy us, in fact, what becomes a reality is that we will perish from the things we love" [3].

Aesthetic standards are shattered, and what was once considered elevated and refined art becomes instantly accessible. However, the consequence may be that people only pay attention to the most attention-grabbing elements, the "explosion" after the "spark," where only eye-catching elements garner attention. Over time, does aesthetics risk being dissolved? "All material and cultural things in the world are treated as finished, symbolic materials and undergo industrial processing, so that the value of all events, cultural or political, evaporates" [4]. After the popularization of this cheap and eye-catching aesthetic, where does the integrity of aesthetics go?

3.2 Loss of Reality

As Jameson expressed concern: "As a society full of images, it is a society that makes people feel the lack of reality, where everything is a kind of text. What people feel now is not the terrifying loneliness and anxiety of the past but a sense of being rootless, floating on the surface, lacking a sense of reality" [5]. AI generative technology constructs a virtual world, a world that is an imitation similar to reality. The real world, enveloped in technology, is transformed into an imitative world, where the reality outside the simulation is dissolved. Grasping reality requires distinctions, as cognition is based on a series of differences. Only with clear distinctions and boundaries can one understand the so-called reality emotionally and rationally, making it truly meaningful.

However, in generative systems, these distinctions are flattened. What is observed is a replication of the imitative world, lacking flow, lacking change, self-repeating, and self-reproducing. Old media collapses into a forest of monuments within the digital sea, merely providing content for the new media of the digital age. People are lost in the hyperrealistic scenes generated by artificial intelligence. The elusive marvels, originally sought after in photography for their reality, become readily available, transforming wonders into commonplace street scenes. In this process, we risk losing touch with reality.

As Roland Barthes expressed, "The true name of photography's essence is 'that-has-been'" [6]. In the dreams of Zhuangzi's butterfly and the dream in Nanke, the ancient people's perception of reality remained genuine, only unaware that they were dreaming in those dreamscapes. However, in the generated world, the generated content closely resembles reality, to the extent that denying its existence becomes challenging. From reality to generation, the generated content is embedded within reality. How does one awaken from this dream? In the era of artificial intelligence, there is a complete upheaval of the traditional societal connection to land, described by Roty as a "soft reality urgently awaiting realization within a hallucination" [7]. The generated images seem to sever the connection between humans and the world, leaving the body to experience images or visualizations from different times and places in the current time and space, leaving them in a state of emptiness without belonging or shelter.

Secondly, there is a dissolution of history and disasters, as Guy Debord once said, "The landscape, as an existing social organization, is the organization of the paralysis of history and memory, an abandonment of history erected on the foundation of historical time; it is a false consciousness of time" [8]. In virtual construction, space ceases to exist; travelers no longer

measure the world through walking but let their gaze roam within images. "It is a mythical universal paradise, where the categories of science, politics, and art become difficult to discern" [9]. The generated images gather all forms before one's eyes, yet humanity is trapped in various spaces, unable to stop and stay still, like being on the surface of a calm but tumultuous sea.

As for disaster images generated by AI, due to their inevitably shocking effects, they will be widely disseminated. This romanticized portrayal of disasters, to some extent, obscures the true danger of disasters and the specific circumstances faced by various subjects in the face of disasters, shrouding both the disasters and human experiences. The exquisite and cartoonish wonders created by AI, like roadside propaganda, cheapen the impact, even leading to the entertainment of disasters.

AI's intervention has made the uninvolved even more detached. Much like Virilio's assertion that "human thought based on observation will be replaced by the traces of big data, public images continuously manipulate surveillance and discipline through illusions, erasing mental images, and replacing the spatiality between subject and object with the temporality of images" [10]. However, this serves as a prompt or warning amid today's explosive enthusiasm for generating images, leading us to reevaluate the crucial significance of the presence of photography. As a representation and index of information, AI-generated images can never replace the value of photography. Throughout the before, during, and after stages of the photographic process, AI cannot provide the presence, encounters, and experiences of both the photographer and the subject. The visual memories created by AI also cannot substitute the vivid memories experienced, documented, and then shared by humans present at a particular location.

4. Impact of AI-Generated Art on the Invariants of Photography

4.1 Adherence to the Essence of Photography

Following the integration of AI-generated art into photographic creation, the significance of the essence of photography is undergoing a reexamination and contemplation. Traditionally, photography has been guided by the photographer, expressing artistic intent through choices in composition, light control, and selection of shooting angles. However, with the advent of AI-generated art, the essence of photography has become increasingly complex and ambiguous.

From a technical perspective, AI-generated art is a product of computational technology, influenced both by advancements in media technology and reflecting the course of technological development since the industrial revolution. Before the industrial revolution, the creation of artistic works was seldom influenced by external factors, and the subjectivity of creation was more safeguarded. With the arrival of the industrial revolution, large-scale mechanized and industrial production led to a closer relationship between machines and humans. This trend of mechanization and industrialization also profoundly impacted the modes of artistic production and dissemination. With the continuous progress and development of computer technology, its application in artistic creation has gradually increased. AI-generated art, as a manifestation of digital technology in the realm of art, profoundly reflects the interactive relationship between technology and art.

From a humanistic perspective, in traditional photographic creation, the artist serves as the primary agent with absolute control over the artwork. However, in the realm of artificial intelligence, the shift to computer-generated creation, while liberating and expanding the artist's capabilities to some extent, introduces new challenges and problems to photographic art. For instance, the application of AI-generated art may restrict the subjectivity of creators, leading to a homogenization of the generated works, resulting in a lack of diversity.

The intervention of AI-generated art profoundly influences the essence of photography. How should this trend be addressed? Firstly, a broader and more in-depth perspective is required to reconsider the definition and manifestations of the essence of photography. Exploring the

interaction and collaborative relationship between AI-generated art and the essence of photography is crucial. Additionally, strengthening research and discussions on the essence of photography is essential to drive continuous development and innovation in photographic art. This approach will enhance our understanding and mastery of this emerging artistic form.

4.2 The Importance of Aesthetics

Guy Debord once stated, "The landscape in society corresponds to a concrete alienation of manufacturing". In the era of artificial intelligence generation, we should be particularly alert to aesthetic alienation. Generation is not merely the manifestation of results; the generative process itself can lead to human alienation. Human life serves as the raw material for generation, continuously supplying for its reproduction. The significance of aesthetics becomes more pronounced in the current context of aesthetic dissolution brought about by artificial intelligence.

While the aesthetics of the era of artificial intelligence necessitate reevaluation and contemplation, it does not imply a complete rejection of the past. On the contrary, aesthetics needs to return to the classics, organically integrating and engaging in a dialogue between the current aesthetic state and aesthetic classics, unearthing the potential of aesthetics. The aesthetic alienation introduced by the era of artificial intelligence disrupts harmony and balance. Within this context, aesthetics needs to play a role in resisting alienation, transforming negative impacts into new aesthetic dimensions. Therefore, the aesthetic challenges brought about by the era of artificial intelligence are not only crises for aesthetics but also opportunities.

5. Conclusion

While computers were invented and applied by humans, they also subtly changed human habits and thinking. In a sense, while humans domesticate computers, they are also "domesticated" by computers. Computer technology is highly associated with science and technology in modern semantics. However, this article does not emphasize a "technology-only" perspective. On the contrary, it is concerned with the art that is truly preserved after technological intervention. When our society cannot achieve self-awareness, science and art are used to explore unknown territories. In this process, data becomes art, and the concept of art is precisely presented through data. Generation is a means, a technological innovation through which human consciousness realizes new forms of civilization, discovering the values and ways of life of humanity.

Today, how to use and understand artificial intelligence generative AI technology is the next direction for exploration. The integration of media breaks through the boundaries of art. According to Hito Steyerl, the medium itself is a "discourse engine that transcends various cultural traditions, used to mediate issues, forms, and fantasies" [11]. The fusion of new technological directions with art pushes the development of contemporary art forward with each attempt. However, artificial intelligence generative AI technology also faces challenges, such as the intervention and manipulation of public aesthetics by capital and the impact on the subjectivity of photography. In this context, it is necessary to reflect and adhere to core values: the status of the creator's subjectivity, the diversity and freedom of aesthetics, and the innovation and independence of art. Only in this way can artificial intelligence generative AI technology play its rightful role in the field of art and propel the development of contemporary art.

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