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Ethical Risks in AI-Generated Art from a Data–Model–Deployment Perspective

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Abstract. The recent surge in the uptake of Artificial Intelligence Generated Content (AIGC), and multimodal generative models in particular has fundamentally altered the way that artistic production in the creative sector has been conducted, breaking down creative barriers and reclaiming AI as a passive collaborative partner, rather than an active participant. Although current discourses tend to present ethical concerns related to the domain of copyright infringement and algorithmic bias as technical malfunctions or mere legal issues, the present paper will claim that these threats are more than mere flaws of the design reasoning of generative AI systems. This paper uses one of the system-level theories and suggests the Data-Model-Deployment (DMD) model, to examine AI-generated art ethical risks. Conceptualizing ethical risk as an emergent property of data curation practices, probabilistic model architectures, and deployment environments, the mapping of the technical pipeline of AIGC systems represents a conceptualization of ethical risk. The analysis follows the relationship in which statistical generalization, optimization goals, and platform governance, in turn, influence the ethical outcomes instead of using empirical prediction or descriptive ethics. The results indicate that the copyright violation is found on the data layer in the form of the extraction of huge amounts of unlicensed training data; the amplification of bias is present on the model layer due to the representational learning and loss reduction processes; and functional injustice appears at the deployment layer in the form of cultural norms and site processes that favor human-centered authorship. Collectively, these findings show that ethical issues in AI-generated art are not, but need to be as fundamental as the design of the generative systems themselves. The research adds to the coherent theoretical view in comprehending AI ethics in creative fields and provides suggestions concerning responsible design and regulation of generative AI systems.

Keywords: Generative Artificial Intelligence, AI-Generated Art, AI Ethics, Data–Model–Deployment Framework, System-Level Analysis

1. Introduction

The artistic production fundamentally changes its paradigm and becomes more deeply embraced in Multimodal Generative Models [1] when the system is more deeply embedded in its annexed instrumental AI. Although the current discourse involves the view of Artificial Intelligence Generated Content (AIGC) as the most efficient resource to create content, a more fundamental

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change: the creation of an AI as a generative system with the power to actively reorganize the creative processes and decision-making routes. With the reduction of the barrier to artistic expression, the role of AI has been shifted to a passive instrument to a systemic collaborator. Nevertheless, this stunted unification has led to acute ethical crises; where an infringement of copyright laws and algorithmic bias are frequently seen as individual technical malfunctions [2,3]. The given research is based on the argument that these ethical risks cannot be viewed as any external accidents, as the theoretical and statistical outcomes of the design logic of the given AI system are actually presupposed by its nature. This paper use a systematic mapping of the technical pipeline of the AIGC, to explore how it is inherent to generative architectures to be probabilistic and thus make an ethical outcome.

In order to cope with these difficulties, the study goes beyond the descriptive analysis of the ethical symptoms to suggest a full theory at the system level, redefining the ethical risks as the interaction products of data curation, model stochasticity and deployment structures. This research is applying a causal analysis technique to measure the propagation of statistical "data traps" (sampling bias, survivor bias, etc) through the generative process and formalise them as in the decision paths of the system. The value of the current paper is twofold in that it transpires individual output to the overall exploration of the generative pipeline and it aims at giving a structural account to explain the formalization of bias. Positioning ethics in the context of the so-called structural probability of AI processes, this study can serve as a fresh perspective of achieving Human-AI alignment within the contemporary industry of creativity.

2. A systemic AI ethics framework for generative art

2.1. Generative AI as a socio-technical system

Generative AI systems applied in art-making processes are to be interpreted not as neutral tools just that increase human abilities to create. Instead, they are elaborate socio-technical systems where technical architectures, data practices and institutional arrangements are closely interwoven [3]. In contrast to the previous versions of digital tools that were mostly there to facilitate or enable human creativities, modern-day AIGC has become the actual contributors or agents of the generation of artistic work by following probabilistic generation procedures [4]. In the perspective of AI systems, generative models make normative assumptions on multiple levels, such as what data are learned, how it is represented, and what is mined and disseminated. Such assumptions are not alien to the system, but are coded in the system architecture or logic. Consequently, ethical implications of AI-generated art need to be perceived as systemic consequences and not singular results of misuse or misconduct of a particular person.

2.2. The Data–Model–Deployment (DMD) framework

As a way of analytically describing the emergence of the ethical risks in AI-generated art, the paper suggests developing a framework of theoretical concepts focusing on three mutually supporting colors: data, model, and deployment. The concept of ethical risk in Data-Model-Deployment (DMD) framework models ethical risk as an occurrence resulted by collaboration across these layers instead of a particular issue that can be blamed on a particular technical component. Generative AIs are based on massive datasets at the data level that are gathered by automated data scraping and aggregation [5]. These data sets encode artistic works, styles, and the cultures of all sorts into statistical images, often without explicit consent of the creators of the original works. The consent,

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ownership, and scope of authorised use in AI training have been identified to pose serious concerns in legal scholarship that such practices open [6,7]. At a system perspective, the ethical risk is not caused by individual incidences of infringement, but because of the normalization of the large-scale data extraction as one of the basic assumptions of the model training pipelines.

Generative architectures at the model layer represent learned representations by using optimization goals that encourage coherence, recognizability and aesthetic plausibility. Empirical experiments show that generative models are likely to intensify preexisting social and cultural stereotypes in training data, especially gender and racial stereotypes [8,9]. With generalization of models on the basis of the prevailent trends, the minor styles and non-dominant cultures of the representations may face systematic exclusion. This procedure is not a mere case of accidental bias, but the statistical rationality of generalization and loss minimization which dictates the design of generative models.

AIGC systems are embedded at the deployment layer inside of platforms that define the experience the user will have with the models and how generated outputs will move through the artistic ecosystems. Prompt-based interfaces give the user the ability to call a particular style or artist which can make the output output even more similar to recognizable work in special conditions. Systems of platform governance also define who gets visible, legitimate, and economically valuable AI-generated art. These infrastructures of deployment form the message of creativity and authorship to the audience, supporting anthropocentrism in tastes and preferences that place preference on art produced by humans over that with the aid of AI [8].

2.3. Ethical risk as an emergent property of AI systems

One of the main theoretical arguments that the DMD framework makes is that ethical risks related to AI-generated art are not cumulative, but emergent. There is no way to fully describe copyright infringement, amplification of bias, and the injustice of an artist through analyzing the data practices, model architecture, or data deployment. Rather, they are due to the fact that statistical generalization, in the model level, is correlated with large-scale methods of data extraction and platform incentives of recognizable and marketed output. An example of how copyright risk can be ethically significant is the fact that copyrighted content, whether contained in the training dataset or not, is reproduced by the generative model; and that platforms are set up to disseminate outputs that are similar to known and accepted artistic expression [9,10]. Equally, representational bias is augmented when model-level optimization similarly up-boosts prevailing trends and deployment settings give a placement advantage to the outputs that are needed to support prevailing cultural norms.

Through an ethical risk approach, which frames itself as an extension of AI systems, this framework breaks with responsibility-based or compliance-based approaches to AI ethics. Instead of taking either the individual form of misuse or post hoc regulation, it tries to highlight structural conditioning of ethical challenges as a result of AI system design. Ethical regulation in the AI-generated art space, then, cannot be addressed through retaliatory adjustments to specific data regimes, predictive models, and execution activities, but through concerted requirements to rethink objectives of governance within a more extensive overview.

Based on the DMD framework, the following sections examine three categories of ethical risks in AI-generated art, each corresponding to a distinct system layer. Specifically, Section 3 focuses on copyright infringement as a data-level ethical outcome, Section 4 analyzes bias amplification as a model-level outcome, and Section 5 discusses creative injustice as a deployment-level outcome.

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3. Copyright infringement as a data-level ethical risk

Copyright issues, which have recently set the wave of headlines as an important debate issue on generative artificial intelligence. Despite the fact the power of AIGC was capable of increasing the protection of copyright laws, its quicker commercialization was inclusive of copyright infringement on a grand scale, thus inflicting moral harm to the community of artists. In the context of the AI system, these copyright threats are directly connected to the data sourcing and training behavior that are behind generating models.

As prescribed under the WIPO Copyright Treaty (WCT, enacted in 1996), only "original authors possess the right to authorize public distribution of their works," and ironically enough, AIGC models tend to contravene this tenet. As pointed out by recent researchers, there is unlicensed use and reproduction of copyrighted material for AI models which includes millions of images, likely underreporting copyright infringement [4].

The infringement of copyrights concerning AIGC can be generally divided into two parts, which are infringement of training datasets and infringement in the generated content. To begin with, infringement of training datasets, in infringement of training datasets, the infringement is applied in the main cases when the copyrighted work is utilized in data collection, model training without the authorization of the copyright owner, the infringement of the copyrighted exclusive rights, that is, the right to reproduce [5]. The number of cases that show the damage of training data abuse is large as some of the AIGC models have unlicensed use as training data on copyrighted content by its respective authors. The second problem is infringement that takes place in generated content. Similarity with core aspects, colors, and lines when similarity is identified, copyright infringement takes place as demonstrated by Huang [9]. One of the studies also estimated the similarity between AI images and original images using the Bhattacharyya distance and Euclidean distance and experimentally revealed that similarity based on the name of the artist in a prompt showed that AI model generates highly similar images under particular conditions [10]. Accordingly, AIGC will lead to infringement of training sets and produced content.

4. Intensification of bias as a model-level ethical risk

From the perspective of the Data–Model–Deployment (DMD) framework, the intensification of bias associated with AIGC primarily manifests at the model layer, where representational learning and optimization objectives shape generative outcomes.

Generative artificial intelligence (AI) encourages diversity in the expression of art around the globe with the ability to generate images and songs with very limited direction. However, this form of AI can increase social stereotypes within society and thus increase gender and racial bias [6]. The ethical issue with popular models such as DALL·E and Stable Diffusion lies within two aspects: model design and training datasets. Firstly, the design and the model can give rise to ethical concerns. According to Anand, one such issue with AI is the concept of 'Stereotype Amplification.' This study provided an example, that queries containing the description 'Asian women' tend to relate them to 'geishas' and other hypersexual representations, and queries including 'playing basketball' tend to relate them to images with primarily African men depicted [7]. Second, the insufficiencies in the quality and volume of training datasets increase bias. AIGC datasets mostly comprise examples from more technologically advanced geographical locations and thus include a higher percentage of dominant cultures [11]. As understood by Zhou, this gives more prominence to white and male populations compared to women and people from other races. The ethical dimensions of such bias can be found outside the realm of the arts [6]. As AIGC affects public perception and cultural

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narratives, bias may end up hampering marginalized communities on several fronts through services such as health and employment [12]. To deal with such concerns, there is a pressing need for ethical reform. Bias audits, diverse data curation, and fair algorithm design should be implemented to address such systemic biases. Overall, the intensification of social bias caused by AI models might truly harm a lot that requires people and society's attention.

5. Potential injustice as a deployment-level ethical risk

Within the DMD framework, potential injustice related to AI-generated art emerges most clearly at the deployment layer, where platform governance, cultural norms, and public perceptions determine the legitimacy and recognition of creative works.

The rise of generative artificial intelligence allows people without any formal arts background to create works of art through simple generative processes. However, a common perception is that AI-generated works do not possess the ethical quality typical among human works, and this can lead to further marginalization and exclusion among artists within the field of art, where the serious injustice might show up. To start with, the natural ethical quality within AI work is often overlooked. While AI generative processes increasingly find their way within contemporary works of art today, the process and concept of artistic creativity overall continue to be perceived as processes and concepts unique to human creation and being. Millet asserts that people tend to love works created by human beings and automatically possess negative attitudes when they encounter AI works [8]. In other words, they tend to be prejudiced and perceive AI works as substandard. Millet also asserts that some people tend to support this perception that human artists maximize their superiority over other artists by belittling AI works. Such tendencies can harm the rights and interests of AI creators who have entered the art field----their works and their own abilities are questioned and not accepted by the public----which makes them treated differently than human creators, often worse. To sum up, people's preference for human artists and dislike for AI creators and the behavior of human artists to judge AI artworks to highlight their own abilities is unfair to authors who use AI to create and this kind of injustice against some creators is widespread in the current art field, so it has become a major ethical challenge for the application of AIGC. Overall, this therefore creates injustice and marginalization among artists today.

6. Conclusion

The paper reviewed the topic of ethical risks in AI-generated art with a theoretical perspective of the system level by suggesting that copyright infringement, bias amplification, and creative injustice are not to be perceived as separate ethical violations or unintended technical errors. Rather, relying on the Data–Model- Deployment (DMD) model, the paper has shown that these ethical risks are constituted as structural consequences of the design of generative AI systems. In particular, the copyright infringement occurs at the data layer due to widespread and often unlicensed data extraction procedures; the amplification of bias at the model layer as the outcome of the statistical generalization and optimization goals; the injustice towards creators in the deployment layer machines can be achieved through platform governing procedures and cultural morals that favor human-centered authorship. Combined, these results underscore that both the probabilistic and systemic characteristics of generative architectures are inherently tied to ethical issues pertaining to AI-generated artworks.

This study has various limitations although it has contributed to theories. The discussion is mainly conceptual without any big-scale empirical validation and quantification of ethical

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implications of various generative models and platforms. In practice, researchers might make DMD framework operational to indexically estimate the propagation of ethical risks throughout data, model, and deployment layers of particular generative systems.

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