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Angel Or Devil? Public Attitudes Toward AI Arts From Cross-Cultural Perspectives

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ABSTRACT

AI Art has attracted the attention of researchers due to the ongoing and rapid development of AI art technology. However, limited research has explored the different attitudes toward AI Art from a cross-cultural perspective. Based on the results from social media platforms and Natural Language Processing (NLP), the current study examines the similarities and differences between Eastern and Western cultures in recognizing AI art. Results showed that Eastern and Western cultures might share similar attitudes toward AI art, human-AI relationship, and positive and negative attitudes, while they might have distinct topics, such as contextual application and usage intention. Theoretical and practical implications might also be discussed in this study.

Keywords: Artificial intelligence, Art, Attitude, Culture

INTRODUCTION

Artificial Intelligence (AI) is a product of science and technology that can perform human-like cognitive tasks with rich technical practices in various fields of major achievements, such as paintings, poems, songs, and even film scripts etc. Over the past few decades, numerous rendering and texture synthesis techniques have been created in the context of computer graphics and computer vision research. These algorithms were created to alter images in a variety of ways, one of which was to apply an "artistic style" to the input image. Deep neural networks, however, have just lately been used to stylize photographs and produce new images; this trend has grown rapidly over the past five years.

Discussions concerning the basic issues surrounding the aesthetic character of these works and their position in the history of visual arts were sparked by the rising trend of employing AI technology in art production. It was still theorized controversial whether the works created by computers could be defined as art. And the topic of novelty and creativity of this sort of art within the context of art history was addressed in the search to comprehend the dynamics of AI art. Aaron Hertzmann (2018) held the view that computers could not currently be recognized as being the authors of art since it was hypothesized that social agents were who produced art. Xinlu Liu (2020) illustrated the relationship between artificial intelligence painting and traditional painting. In addition to having a significant influence on modern artists

and expanding their creative horizons, artificial intelligence technology also improved the interaction between viewers and art. Because artists were naturally sensitive, artificial intelligence technology expanded the scope of their creative thought. Liu supported the esteem of digital technology as a device and means for artistic creation, and the ingenious evolution of art relied on the full combination of digital technology and traditional painting forms. Lu Li (2022) thought, In the future, there will be even more overlap between artificial intelligence and contemporary art. The issues and crises that the continuous advancement of AI in the arts may bring should also be taken into consideration. As AI is used in the arts more and more, it may advance, becoming more and more accurate and subtle in its imitation of human artistic works, producing content texts, visual or musical compositions that convincingly resemble those of humans, or even pushing the boundaries of our current technology and revolutionizing the body of artistic creation while maintaining many of our previous artistic theories and traditions and challenging the position. Salvatore G. Chiarella et al. (2022) pioneered a novel approach to aesthetic assessment by combining self-reported aesthetic evaluation of two abstract paintings shown in an ecological art context with implicit psychophysiological parameters like EDA and HR. The results reported the first evidence of the impact of the implicit comparison within the manipulation of the pre-assignment of authorship between humans and AI to unknown abstract artworks, demonstrating that the lower pleasantness attributed to an AI-product is the result of prejudice rather than a pure, unbiased judgment. It is clear that the questions of whether AI art displays creativity and whether AI generators will supplant the traditional art world and its practitioners are still up for dispute. But we must acknowledge that it has significantly altered how art is produced, created, and even how people live.

Some research discussed in detail of the attribution of very different attitudes towards AI art or AI creators. Yanru Lyu et al. (2022) carried out an evaluated experiment of artists and nonartists that co-created with AI, and found that the action characteristics of artists were still different from those of nonartists, as well as their attitudes and concerns, which were due to their knowledge. A survey experiment was utilized in a different research to ask 288 individuals to rate the artistic merit of two types of works of art (AI-created vs. Human-created) using a scale that is frequently used among art experts. Participants' assessments of the creative worth of pieces of art were unaffected by participants' knowledge that artwork was produced by artificial intelligence, according to the research. Nevertheless, the rating was severely impacted by the premise that AI cannot create art (Hong J W et al., 2019). Mikalonytė E S et al. (2022) designed two experiments by manipulating the agent type, behavior type and object types to determine whether people will accept robot painters and paintings created by AI-driven artificial intelligence as art. The findings demonstrated that people see human and machine paintings as works of art to a similar degree. The fact that people are far less inclined to attach creative goals to robots than to humans may help to explain why people are much less likely to view intelligent machines as artists than humans. All of the above studies were conducted by recruiting

specific participants to carry out the evaluation experiments, among whom there were no differences or types.

When we talked about the reasons why people held ambivalent attitudes in terms of AI technology, not only AI art, there seemed to be many more answers. This suggests that we can broaden our horizons and focus on the potentially vast diversity of evaluators themselves, in particular, whether similar differences exist between groups from different cultural backgrounds. The conclusion was uncertain when it came to the question of whether people from different cultures would differ in their attitudes toward Artificial Intelligence technology (Dang, J., & Liu, L, 2021; Persson, A. et al., 2021). This is also based on the fact that AI paintings are so popularly exhibited on social media platforms around the world and have received a large number of comments. We are able to find out some of the cultural differences that lead to conflict and convergence behind these comments.

Practically, the ambivalent attitude of people towards AI and the lack of understanding about it indeed hampers measures to facilitate people's willingness to use AI technology to assist them. In the future, when AI-generated technology promotes globally, regional acceptance and attitudes of users will also be an essential part of the consideration. Thus, this study selected comments on several important regional social media platforms as the objects to figure out whether the opinions and attitudes towards AI-generating technologies held by people from all kinds of cultures will show specific characteristics.

Previous studies exploring the attitudes of AI art users have used methods of recruiting certain participants and relying on the survey with close-ended questionnaires to measure it, to a large degree. In order to collect as much data as possible in real and natural contexts, comment data of relevant videos on social media platforms were selected to analyze. As users' understanding of machines could be socially constructed and culturally produced (Pinch & Bijker, 1987; Winner, 1980), it is important to expand the research focus from individual countries to cross-cultural contexts (Kun Xu, Fanjue Liu etc., 2020). Moreover, previous AI art studies have paid less attention to the influence of cultural background or mostly engaged in Western and East Asian cultures of the comparative study. Here comes a question, besides Western culture, is AI more accepted in different ethnic groups within the same East Asian culture? On the basis of previous studies, this study selects three video platforms. The first is YouTube, which represents the English cultural circle and is popular with native English speakers all over the world. In addition, as the representation of Sinosphere, the Chinese platform Bilibili and YouTube in Japanese were chosen to investigate the different attitudes of different ethnic groups within the same cultural circle, to better explore the cultural factors of AI art attitude. Each of these three video platforms has a mainstream status and a large number of users in their respective cultural environments, and, because videos have a long time, dynamic display and clear narrative function, they can rapidly allow the general public to understand the process, principles and use of AI painting.

METHODS

Data Extraction

Comment data from the top 30 videos in view counts of three languages on Bilibili(Chinese), Youtube (English) and Youtube (Japanese) were used in this study. Each language contains ten videos and the data was retrieved by December 24, 2022. These Videos are collected by searching key words "AI作画", "AI Art", "AI画像生成" and then chose by their view counts and relevance. The keywords were expanded to "AI 艺术生成", "AI Art generation", and "AIクッキ". Then we collected all the comments data of those 30 videos. The User IDs, posting date and time, and languages of all comments were also gathered from the query results. The 30 videos were classified into three groups based on language: Chinese, English, and Japanese. Each group was processed and analyzed in the same way, ultimately comparing the results between groups.

In this study, 25,342 comments from three sources (6,915 from the Chinese source, 10,479 from the English source, and 3,455 from the Japanese source) were retrieved. All the English words in the tweets were transferred to half-width and lowercase. After data cleaning, 20,849 comments were used for further analysis.

Tokenization is a fundamental step in many natural language processing (NLP) methods, especially for languages like Chinese and Japanese that are written without spaces between words. We tokenized all comments and analyzed the unigram and bigram tokens. The website links, special characters, numbers, and "amp" (ampersands) were removed from the comments before tokenization. The Python packages SpaCy and GiNZA were used to remove the stop words in each language and implement tokenization. The tokenized words were joined by white space characters into text in the original order. The Python package scikit-learn was used to convert the white space–joined texts into unigram and bigram tokens and to calculate the counts of tokens.

Latent Dirichlet Allocation and Preprocessing

LDA is an unsupervised generative probabilistic model widely used in topic modeling. LDA regards the documents in a corpus as generated from different topics, and each topic generates the documents following a Dirichlet distribution. David Blei has an excellent introduction to probabilistic topic modeling published in the Communications of the ACM. In this particular study, we apply the Latent Dirichlet allocation to categorize the collection of comments into latent topics. In the LDA model, each document (e.g., comment(s) in our study), treated as a vector of word counts using the bag-of-words approach, is viewed as a mixture of probabilities over the topics, where each topic is represented as a probability distribution over a set of words (i.e., the dictionary). Before applying the LDA algorithm, we first sanitize the dataset by removing the hyperlinks, hash-tags "#" and reply-tags "@", and then apply the WordNet Lemmatizer in the Natural Language Toolkit (NLTK) to group the different inflected forms of a word into its lemma. We also remove a list

of stop words such as "a", "I", etc. and words that occur less than 3 times in our corpus since such infrequently found words do not construct meaningful latent topics in our context. By doing so, we create a "clean" dictionary for the LDA model.

Bag-of-Words Assumption

This study used the bag-of-words model to detect top frequent words. A Bag-of-Words model represents the 'attendance' of the words in a text document. Regardless of the structure of the terms, or the grammar of a sentence, the text document is thought of as a 'bag' where syntax is not considered. The only thing that matters in the bag-of-words model is where a word appears in the text, not where and how.

RESULTS

Based on the elbow method, four themes emerged from three sources. Themes, keywords, and samples are summarized in Table 1. The frequency and inter-topic distance can be found in Figure 1, where the size of the circle refers to the frequency of the topic mentioned in the corpus, and the distance refers to the relationship among different topics.

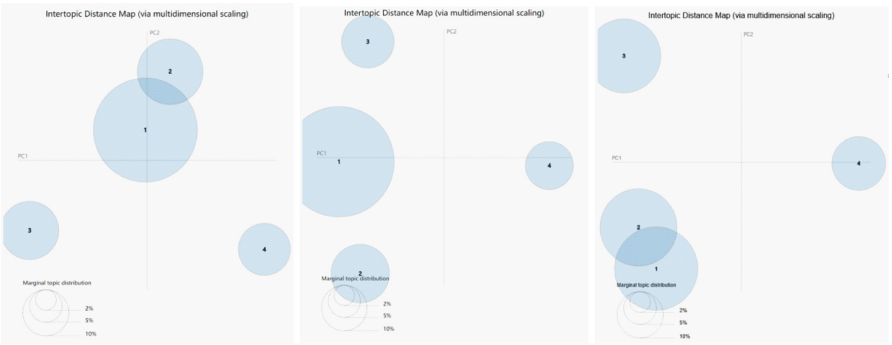

Figure 1: Intertopic distance map from three sources (Left: English; Middle: Chinese; Right: Japanese).
Note: Numbers in the map denote the theme topics' numbers in Table 1.

CONCLUSION AND DISCUSSION

Viewers' perceptions of machines are shaped by their conventional mindsets, which can be conversely reconfigured by new technological practices,so it is important to understand how cultures may have shaped users' interpretation of machine-generated content (Kun Xu, Fanjue Liu etc., 2020).

As we can see, topic 1 on these three platforms was labelled as "Human-AI relationship", as it included several word which reflected a rethinking of the relationship between human and AI, the problems artists may face and how to get along, to some extent. And the top three trending topics on Western and Chinese platforms are similar. Topic 2 consisted of several words like "creepy", "lose", "disturbing" and etc, so it was labelled as "Negative Attitude".

Table 1. Main themes from three sources with samples.

	English Perspective	Chinese Perspective	Japanese Perspective
Theme 1	Human-AI relationship	Human-AI relationship	Human-AI relationship
Keywords	Art, AI, artists, people, human, workcreate, use, tool, style	AI, 画师, 绘画, 学习, 问题, 创作, 版权, 代替, 进步, 训练	AI, 代理人, 虐待, 教育の意, 法律, , 消去する
Samples	• *I was completely shocked after seeing how crazy Ai is and now I am watching your video which made me realized that this world is going to change.* • *Wow this is amazing, humans have truly come so far in our advancements with technology. But it also scares me… because I feel as though we may be creating A.I. that is a bit…. Too intelligent. But this is incredible!*	• 得职业画师不必过多焦虑,*ai*永远不可能取代人类的想象力,只要有实力和奇妙的灵感,不管什么职业都不会被取代 • *AI*永远不可能代替人类的美术,如果那一天来了 那么*ai*的发展就可以脱离人类咯 • 感觉是*AI*从*0*~*90*,最后由人从*90*~*100*	• いくら*AI*がしようがレトルトさんの代わりは出来ないさ。 • 用する人がいなくなればいいのにね • さすがにこの*AI*がイラストレタに完全に取って代わるとは思わないけど、*SNS*とかのアイコンぐらいだったら人にまずに*AI*に描かせるみたいな代は来そうだと思った
Theme 2	Negative Attitude	Negative Attitude	Positive Attitude
Keywords	Creepy, disturbing, opposite, terrifying, scary, deep	恶魔,死亡,失去,毁灭,孤独,恐惧	インプレッシブ, すっげ, 味深い
Samples	• *It doesn't work the pictures were so ugly* • *I'm convinced I don't understand this AI art thing enough to appreciate this... phenomenon? for anything other then 'computer draw ugly pictures.' Can anyone steer me in the right direction?*	• 人类失去传统艺术,在网络上看*AI*写的千篇一律枯燥无味毫无灵魂的艺术作品 • 以后的发展趋势就是代码的世界喽！人类被代码奴役,黑客帝国的世界可能并不是虚幻	• *AI*の技もここまで追い付いたか*!!*って感心します • *AI*のセンス予想の斜め上すぎる、すごい • 凄いし面白かった

Continued

Table 1. Continued

	English Perspective	Chinese Perspective	Japanese Perspective
Theme 3	Positive Attitude	Positive Attitude	Use Intention
Keywords	Amazing, great, thanks, awesome, love, nice, good	好看,赛博朋克,抽象,不错	トライ, アシスト, 自作成, ファン
Samples	• *Truly beautiful stuff, thanks for covering! Digital strangeness of this kind is a mirror to our own inner demons, it seems.* • *AI art has always reminded me of dreams…*	• 太棒了,也许终于可以点亮我的绘画天赋了！！ • 艺术是作者对于内心灵魂的映射,而非拘泥于形式,在科技越发便捷的今天,过往没有任何时代比如今的大众更加接近艺术	• を描く方法が*ai*に自生成させてから自分のオリジナルを描き足したり • ゲム作るなり、画集作るなり、アニメ作るなり • デジタルは*PSO2*の自キャラ*SS*を取って作成でしむのが精神生上いいかな • 本当にありがとうございました*_ _)今っているが一通りわったら*AI*にも手を出してみようと思います！
Theme 4	Application Program	Application Context	Negative Attitude
Keywords	Dall, website, craiyon, dalle, vsauce	少女,天空,城市,眼睛,黑色,扭曲,白色	恐怖心, 怖い, 破, 悲しみ, オリジナル, 努力
Samples	• *Dalle 2 is better and more powerful bc you can also edit pictures with it* • *Writers who don't know how to draw perfectly a character from their story: exist; Craiyon: I gotchu homie*	• 古风场景,红衣少女青丝,仗剑,诸神朝拜。一袭青衣执刀立,眼流血水,怒看苍穹少女。 • 巨大的熊布偶一样的某种东西,虚无,神明,未知,神秘,神圣,诡异,压迫感,虚空	• *AI*のって概念でどこか不完全だから持ち く感じちゃうけど、局になって描いてもらっちゃう • *AI*にする漠然とした不安を上手く取り入れられている怖いゲムですね • 泣きたくなるわ

Topic 3 contained words like “amazing”, “awesome”, “cyberpunk” and etc, that we labelled as “Positive Attitude”.We conclude that comments on AI art on these three video platforms are more likely to mention topics that are related to Human-AI relationships, negative or positive emotions. Furthermore, although the gap in this comparison was not large, more people showed a negative attitude than a positive one.

As is evident, when faced with the convenience and well-being brought by AI technology, people in West and China are still most concerned about whether it can completely replace human painters, whether their works can be confused with those created by humans and the future of artificial intelligence and humans. These appear to coincide with what has been focused on in past studies. Furthermore, the results suggest that people tend to show ambivalent attitudes toward AI, perceiving them as both allies and foes in the meantime, but the negative attitude still slightly prevails. On the one hand, some people think the artworks drawn by AI are ugly and boring, which is due to the existing technical constraints. In a way, AI painting is an output of an algorithm that resembles painting in some ways, but it actually demonstrates how technology can duplicate the details of an artwork. Artificial intelligence has a considerably higher business worth than aesthetic value, and exactly because it is far more productive than people, its aesthetic value is diminished. This is dictated by its technical instrumental status. On the other hand, people are more concerned about the potential threat and challenge they pose to humans than they are about praise. As early as the Industrial Revolution, factories replaced some of the handmade products with mass-produced machine-made products, with a consequential loss of jobs for the lower-level manual workers. Under these circumstances, “people began to wonder if they were being replaced by machines, or even becoming machines themselves”. A large number of novels and films also take as their theme the threat, destruction and chaos brought by machines. Technology has really changed our lives and production methods while offering the benefits of convenience. Artificial intelligence to replace the painter may only be the first or epitome, and the self-regulation of digital images shakes the subjectivity of painting creation, forcing us to return to Heidegger’s examination and questioning of the nature of technology, which is an inevitable issue in the technological revolution.

It’s worth noting that when it comes to positive outlooks for AI painting, some Chinese would mention wanting to see ai painting based on more abstract words [e.g., “想看AI画一些抽象的东西: 人生的意义/爱/成功/失败……” (Want to see AI draw something abstract: the meaning of life/love/success/failure.....)].

Topic 4 displayed a somewhat different tendency in Western and Chinese platforms. English culture circle concerns “Application Program” such as “Craiyon”, “Dalle” or other relevant AI painting website. Nevertheless, the users of Chinese Bilibili prefer to mention “Application Context”, like “少女”(maiden), “天空”(sky), “城市”(city) and other such detailed features of character or scene. It is on the basis of these tag lines that artificial intelligence draws.

Social constructivism of technology (SCOT) may provide an explanation for various attitudes toward technology from various cultural origins. Technology is interpreted differently by people depending on the social groupings they belong to. Findings indicate that users in the English-speaking cultural world are more attuned to the technology itself, and they would compare or recommend various ai painting sites for it. One rationale might be that because of their early and extensive exposure to intelligent machines, they are better aware of both the capabilities and limitations of AI art. China has only recently started to debate the AI painting craze, people are still more stuck in how to use the technology and what scenes can AI renders to the maximum extent. The growth and use of technology in daily life, rather than cross-cultural disparities between the West and East, is this likely explanation for the variations in technological views under consideration. Yet there is there is another, more deep-rooted factor that could account for this difference. Chinese attach great importance to practicality, and the philosophy of pragmatism is one of the long-standing parts of classical Chinese philosophy. Chinese pragmatism originated from Confucius and was developed in modern times. In the Analects of Confucius, the story of Confucius' meeting with Nanzi is a kind of pragmatism, telling future generations to pursue practicality, so as to promote effectiveness in reality, which is most important. This is even more apparent in the religious and technological cult of the Chinese. Many people only worship Buddha and burn incense when they have something to wish for, let alone in the face of the more tool-oriented artificial intelligence technology. In addition, Chinese are also accustomed to starting from an empirical habit of thinking, exhausting concrete phenomena, digging out the advantages and shortcomings of the technology, and then carrying out bottom-up integration and generalization.

The situation in Japan might be a little different. A hallmark of Japan's approach is technological optimism, the West reflects a more precautionary stance (Nancy S. Jecker, Eisuke Nakazawa, 2022). In Japan, critics showed more positive attitudes and intentions toward AI painting, which were also reflected in the results of the analysis. Among them, topic 2 and topic 3 were "positive attitude" and "use intention" respectively, while topic 4 included "negative attitude". The Japanese are highly animism, which further explains their stance on technology. Japanese religious beliefs are diverse, placing more emphasis on ceremonial behaviors than on doctrinal principles, and they perceive God to be present in mundane items. The Japanese saying, Yoyorozu-no-Kami (8 million gods), expresses the idea that the Japanese see gods in everything (Nancy S. Jecker, Eisuke Nakazawa, 2022). So the same applies to their view of technology.

However, this paper also has some limitations worthy of noticing. First of all, the social media used in this study is the video platform to share AI art experience. However, there are many other social media platforms also covering AI art, such as Twitter and Weibo. Future studies will incorporate richer sources to have more comprehensive research on public attitudes toward AI art. In addition, the current research only focuses on online comments regarding AI art. However, senior stakeholders might not use the medium to

express their opinions. A future study might use mixed methods to validate the current conclusion.

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