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Research Article

Reforming Intellectual Property Right Based on Public Preferences towards Artificial Intelligence Generated Music

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ABSTRACT

This study examines how legal frameworks should set a clear definition for Artificial Intelligence's (AI) role in creative work through the perceptions of the younger generation on AI-generated music. Using a survey composed of 6 components (perceived quality, perceived imaginativeness, spatial presence, empathy and musician's competence), this study sampled the technology and art related intended majors sampling groups to determine whether the computational music passes the Turing test. After listening to two samples with hidden artist identities (Human vs. AI), the participants (n=35) were asked to evaluate the samples presented. Then, artist identities are revealed and participants were asked to make changes to their initial responses. This study found that participants have similar appraisals towards human-composed music and AI generated music while there is a significant difference between the initial attitudes towards AI for the two sampling groups. For participants who changed their responses, there are no significant changes in attitude but an overall negative shift in responses is observed. This study concluded that the possibility for the younger generation to recognize AI as actual artists and thus supporting AI IP rights is low. Further implications of the findings and future directions for research are discussed.

Keywords: Artificial intelligence; Computational creativity; AI-generated music; Human intelligence

INTRODUCTION

Artificial Intelligence (AI) refers to machines that can simulate human intelligence and mimic human thinking and behaviors. In recent decades, the use of AI technologies has increased. AI technology embedded in daily products to assist humans has moved on from movies and fiction novels to reality. Especially when the era of the internet comes, people are getting used to AI's assistance. Some common daily products that utilize AI are Apple's Siri, which interprets user input and responds by mimicking human conversation, and Google Search, which pushes smart search suggestions to users based on their search history [1]. The main focus researchers have focused on is the pattern recognition that human intelligence is capable of. Given AI's ability to analyze patterns from massive data, AI is now applied for various purposes: Game strategy developments in chess and Go, problem-solving in industries such as health care, cyber security and the creation of artworks (i.e., paintings, poems, music) [2-5]. Despite the widespread use of AI, the controversy continues to rise as AI algorithms evolve. According to Fast and Horvitz, although discussions revolving around AI are turning optimistic, certain concerns about AI have arisen. By analyzing news articles related to AI technologies, Fast and Horvitz discovered that the fear of AI losing control has tripled in recent years compared to the 1980s when AI has just started to evolve [6]. In addition, they also find that ethical concerns for AI have become more common. This means that humans are afraid that AI systems will outperform humans in the near future. The concerns are proven valid. In 2016, AlphaGo, a Go AI built by DeepMind, defeated the best Go player Lee Se-dol, winning 4 out of 5 matches [7]. Similar fears have appeared in other fields as AI progresses into fields of creativity. In Moruzzi has conducted a survey on the public regarding this particular issue. She concluded that the participants are aware of the possibility that AI can obtain creativity but still express how AI should not be creative [8]. Nevertheless, it is impossible to cease the development of AI. Hence, there is a need to protect human creativity while allowing the development of creative AI to address public concerns through evaluating stakeholders' perceptions.

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LITERATURE REVIEW

Background

To examine this topic, we need to understand how past research has shaped the discussion around AI. The basic concept of machines mimicking human thinking and behaviors dates back to 1950 when Alan Turing published his seminal piece Computing Machinery and Intelligence [9]. Turing proposed the question "Can machines think?" in the paper and put forth a modified imitation game Turing test to answer it. The Turing test involves three stakeholders: an interrogator who tries to determine which is the human, a human participant which performs the actions demanded by the interrogator, and a machine participant whose role is to trick the interrogator to believe that it is a human. With the Turing test, Turing presents a fundamental method for future researchers to measure machine intelligence. Most importantly, Turing's proposed question showcases the ability of machines to mimic human behaviors, including the creative aspects, and the possibilities of machines outperforming humans on certain tasks.

Modern perspectives

Throughout the decades of AI development, time has proven Turing's prediction on creative AI right. On November 3, 2018, Steven Thaler applied to register a copyright for creative machine-generated work, claiming that the work "was autonomously created by a computer algorithm running on a machine". However, the United States Copyright Office later refused Thaler's proposal on August 12, 2019, by stating that the generated work "lacks the human authorship necessary to support a copyright claim" and specifically mentioned that copyright will only be granted if the work is created by a human author [10]. In February 2022, Thaler submitted his second request to register a copyright for the generated work by asserting that "there is no binding authority that prohibits copyright for (computer-generated works)." Nevertheless, the Office claimed that copyrights are to protect "the fruits of intellectual labor" which are only found in human creative minds, and again, rejected Thaler's request.

Similar debates have aroused in other countries as computational creativity improved along with advanced computing capacities. The United Kingdom's Copyright Designs and Patent Act (CDPA) began dealing with computer-generated work by specifying its definition as a work created without a human author [11]. However, to achieve this, AI must be granted legal personhood. Legal personhood does not have to be actual humans. Rather, they can be companies, governments, ecosystems, and organizations [12]. With legal personhood, entities can obtain the same rights as humans, including intellectual property (IP) rights. Indeed, a draft report in the 2017 European Parliament has proposed to "create a specific legal status for robots in the long run and possibly applying electronic personality to cases where robots make autonomous decisions or otherwise interact with third parties independently" [13].

Nonetheless, artificial intelligence should not be treated as individual entities but rather as simple tools. Using the CDPA's definition for computer-generated work, it is clear to see that the work must have zero human input for AI to receive copyright protection. However, due to current hardware computational capacity limits, a certain degree of human input is required to produce creative work [14]. Therefore, it is impossible for AI to obtain copyrights at this current stage. In addition, researchers also claim that "creativity is a uniquely human characteristic" and thus, they believe restrictions should be placed on AI interfering in the field of creative tasks [15,16]. Still, forbidding the development of AI's creativity is highly unrealistic due to the immeasurable benefits that advanced AI can bring to human society. To sustain AI development and preserve human creativity, this paper seeks to address the issue of the protection of human creativity once the hardware technology is matured enough to allow AI to have full control over itself.

Definition of creativity

Despite the decades of debate over the protection of artificial and human creativity, there are still no settled definitions for creativity. Generally, creativity can be separated into two categories: psychological creativity (P-creativity), referring to ideas that are new to the individual, and historical creativity (H-creativity), referring to creations that are novel to the entire world. Since H-creativity is too broad to define and can be affected by factors that range from cultural beliefs to technological advancements, this study will only focus on P-creativity. As identified by the authors of, there are four components that categorize creativity: motivation, available knowledge, past experiences, and preference. Agreeing with, Mateja and Heinzl in discuss the 4 P' model of creativity, which includes aspects such as Person (Producer), Process, Product, and Press/Environment. The 4 P' model of creativity was first proposed by Anna Jordanous in, where she defined Person as the creative individual agent, Process as the actions taken by the identified Person, Product as the result produced by the Process, and Press as the situation where the creative process takes place [17]. The authors in further break down these four aspects into task-specific components by explaining how society can greatly influence task motivations and how domain-relevant skills can contribute to building machine-based creativity. Understanding the composition of creativity is essential to this research project as it allows this research to quantify the concept of creativity through method designs.

Past attempts

The most obvious way to address the threat of rising intellectual creativity is to establish an international legal framework that reaches a balance between the protection of AI-generated works and the preservation of human creativity through clear definitions of AI's role in creativity. As aforementioned, creativity contains various components. Through analyzing intellectual creativity's performance on these elements, this research will be able to showcase a potential direction for future researchers to establish limitations on creative AI generators and protect human creativity. Current research like has analyzed past governmental responsive issues and concluded that the influences of public opinion on policy making are indeed substantial [18]. As a result, this paper will conduct surveys to gather data on public opinions regarding the reformation of intellectual property laws for AI-generated works. Past researchers have taken similar approaches and examined the effects of different cultural backgrounds on this issue. Hong and Curran in ask participants with various ethnicities, education degrees, and income levels to rank their opinions on the identified creativity criteria, and conclude that AI-generated arts are not advanced enough to pass the Turing test [19]. By the same token, Yuheng et.al surveyed American and Chinese subjects with AI-

generated art and poems. In their study, they found that Americans tend to have a negative attitude towards AI due to the fear of job replacements while the Chinese reveal the opposite trend. Yuheng et.al later finds that a similar trend can be observed when examining AI creative works. Despite the survey designs used in being fully justified, the participants surveyed in either research are all above 18 and are not highly influential to this issue [20]. Hence, there is a need to re-conduct the experiment with newly defined stakeholders to better understand how the legal framework should set the definitions for AI's role in creativity for future regulations. This paper will model itself off the survey design of and experiment on a different population.

METHODOLOGY

Participants

In total, 35 participants from Pacific American School (PAS) are chosen. To see whether there is a stereotypic bias towards AI for individuals from different backgrounds, this study separated the participants into technology-related intended major and art-related intended major groups based on classes taken (class histories are retrieved with assistance from academic offices). To provide the current literature with a set of data from a novel perspective, all participants are high school students under 18, with 31.4% male participants and 68.6% female participants. All participants participated in this experiment voluntarily with no incentives provided. Although separating participants into groups based on the classes taken might not fully reflect their intended major, students of PAS utilize technology in their daily education, and therefore all participants are familiar with rising technologies and have firm stances to present their perspectives on the topic being discussed. To avoid any confounding variables from affecting the results, this study asked all participants to indicate whether or not they have heard the sample music before. If so, the data collected for that participant will be removed from the analysis. Out of the 35 participants, 5 samples are excluded from the data analysis **(Figure 1)**.

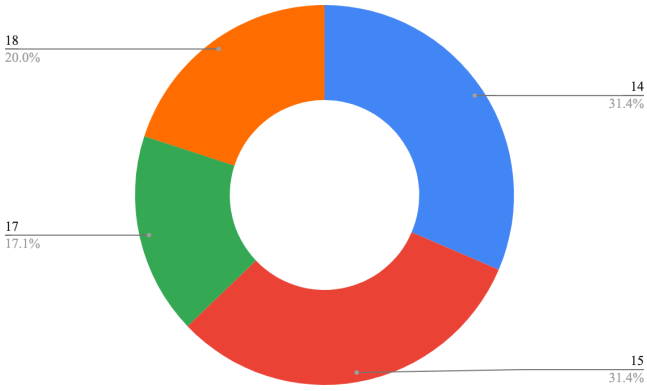

Figure 1: Doughnut chart for participants' age distribution.

Procedure

This study aims to provide visions into the creativity of AI and its potential effects on public perception of human-composed artworks through surveys. To begin with, each participant was asked to fill out an online questionnaire that records their demographic data and initial attitudes toward AI, and the participants are also asked for their consent on the submission. Then, two music samples (one composed of AI and one composed of humans, both randomly chosen from the sample pool) were presented to the participants in random order. For all random processes used in this study, JavaScript's built-in function Math. Random is used (Appendix A). After reviewing each sample, the participants were immediately asked to fill out a survey evaluating the creative components of the music. To minimize biases in the collected responses, we restricted the mu sic sample genre to Jazz. The choice of music genre is very important for analyzing computational music as it defines the specific composition style for the sample music. The composition style has three elements: Rhythm, scale, and structure. The music genre Jazz is specifically chosen as it is popularly studied in fields of computational intelligence with notable characteristics in scale and rhythm [21]. To use representative Jazz music pieces, three one-and-a-half-minute clips of human-composed music samples are chosen from the 2019 Jazz international competition Hancock Institute Competition. On the other hand, the sample that represents AI is composed of Artificial Intelligence Virtual Artist (AIVA) with generating parameters shown in **Figure 2.** This study chose AIVA to generate AI music samples due to its ability to "capture the concepts of music theory and understand the art of music composition". The sample pool and surveys are the same throughout the experiment, except for the order of listening to the music samples composed by AI and humans **(Figure 3)**.

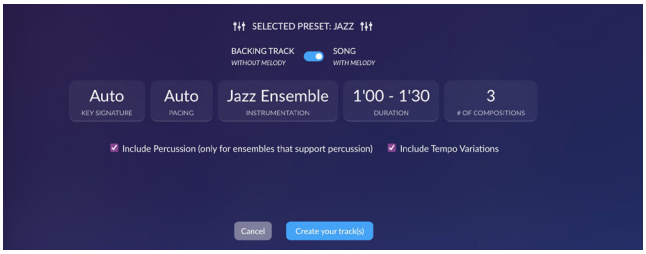

Figure 2: Input parameters for generating Jazz music using AIVA (minimal degree of human input is used to ensure the type of Jazz music and duration is similar to those of human composed samples).

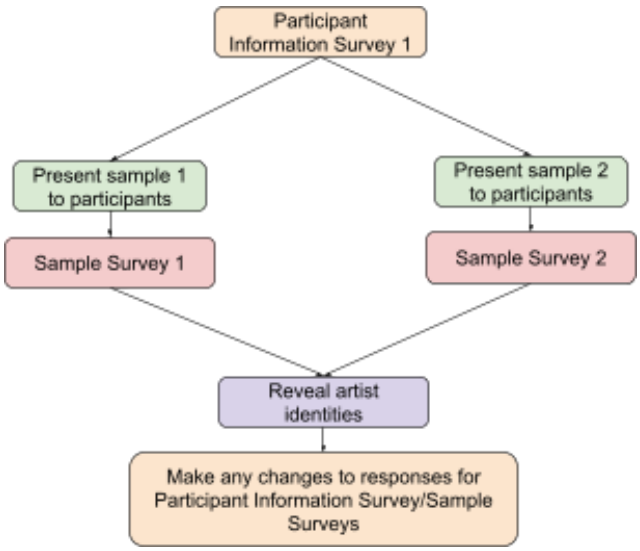

Figure 3: Procedure flowchart for the experiment setup.

Survey

The survey used to analyze AI generated paintings and poems were modified to better survey AI generated music. The survey is composed of the following categories with each item measured on a 5-point Likert scale (unless specified, all items are measured from "Strongly Disagree" to "Strongly Agree"): Perceived quality, perceived imaginativeness, spatial presence, empathy, musician's competence, and attitude towards AI (Appendix B and C). The following components aim to reflect how well AI handles the P-creativity and performs in the 4 P' model of creativity by comparing participants' opinions towards AI generated music and human composed music. For this specific context, the Process and Press aspects for the creativity model are not examined.

1. Perceived quality: The first component perceived quality measures how well the result composed or generated by the artists are with nine items ranging from "Enjoyable" to "Informative." This component is based on the Product aspect of the 4P' model of creativity as it is a reflection of the quality of the music samples presented to the participants. As a result, this component can provide quantitative data for the creative process results.

2. Perceived imaginativeness: The next component, perceived imaginativeness, consists of three items: "Imaginativeness," "Creative," and "Innovative" where all items are evaluating whether or not the music sample is novel to the individuals. As a result, this study will be able to evaluate how well the artists handle P-creativity in the sample music by examining participants' ratings for each item.

3. Spatial presence: With the addition of the spatial presence component, this study can further analyze artists' performances in the Product aspect of the 4 P' model of creativity. For spatial presence, a total of four questions are asked to evaluate how audiences can interact with and respond to the heard sample music, where the questions are directly correlated to the results generated by the artists.

4. Empathy: Furthering the 4 P' model of creativity, this study also examines the empathy component of each sample. Empathy is measured through four items that focus more on the authors rather than the compositions themselves. This component is critical to this survey as it reflects how the Person aspect of the 4 P' model of creativity affects audiences' experiences in listening to the sample music.

5. Musician's competence: The last component in the sampling survey is the musician's competence, which provides direct responses that reflect the artist of the samples. Musician's competence measures the quantitative data for how the audiences perceive artists' characteristics (i.e., knowledgeable, expert, intelligent, and gifted). If AI-generated music is not able to pass the Turing test and therefore, is distinguishable from human composed music, this component is expected to show clear differences when the resurveying is conducted.

6. Attitude towards AI: Attitude towards AI is composed of three items (i.e. Bad...Good, with ill will... With goodwill, and Not Beneficial...Beneficial) and is located on the Participant Information Survey to record participants' initial opinions towards AI. It is critical to include this component as it allows this study to analyze all responses from the same bases by recognizing and identifying the presence of biases towards AI.

Hypothesis

Taking previous literature studies above into consideration, this study proposes the following hypothesis:

1. AI-generated music samples will show significant differences to human composed music samples for the components in the sampling survey and will reveal positive mean differences that indicate a more favorable attitude towards human-composed music samples.

2. Technology-related intended majors will show relatively more positive attitudes towards AI-generated music than art-related intended majors after artist identities have been revealed.

RESULTS AND DISCUSSION

In the sections below, the sample group of technology-related intended majors will be referred to as the technology group, and the sample group of art-related intended majors will be referred to as the art group. For all statistical tests used, the statistical significance is analyzed using two-sided p-values and a significance level of 0.05.

Participant appraisals

To better understand the difference between the technology group and the art group's subjects' responses to the music samples, the study compared the recorded survey results. The first round of surveys is conducted with the assumption that people cannot discriminate between human-composed music from AI-generated music. For comparing the survey results, an independent t-test is conducted. According to **Table 1**, it is evident that subjects' overall appraisals of human-composed music are not significantly different from AI-generated music. For the Perceived Quality, items "Enjoyable" and "Coherent" have two-sided p-values less than 0.05 and hence, show significant differences between AI-generated and human-composed music samples. For the Spatial Presence and Empathy components, items "To what extent did you feel mentally immersed in the experience?", "How involving was the media experience?" and "I could identify with the author of the music." reveal a significant difference between the two compared groups. For the Perceived Imaginativeness and Musician's Competence components, all items are not significantly different between the compared groups. This proves the efficacy of this section of method design as subjects are not able to differentiate between the presented music samples and identify the respective artist identities. In general, results generated shows that AI-generated music is able to pass the Turing test for the Perceived Imaginativeness and Musician's Competence components and therefore, the proposed hypothesis 1 is not supported.

Initial attitude towards AI

Considering the fact that individual attitude differences towards AI can have potential effects on components' data analysis, this study also compared subjects' initial opinions towards AI using an independent t-test to identify the presence of the potential stereotypical biases. After comparing all the items under this component (i.e. Bad...Good, with ill will... With good will and Not Beneficial...Beneficial), it is shown that all items reveal a negative mean difference (**Table 2**). This shows that the subjects from the art group reveal a less positive attitude towards AI than subjects from the technology group. Judging on the fact that art group subjects and technology group subjects show similar responses to

AI-generated music, it not only shows that art group subjects have a stereotypic bias towards AI but also proves that the subjects did not acknowledge some music samples given were generated by AI.

Reveal artist identities and response changes

To evaluate whether the proposed hypothesis 1 is valid or not, however, we need to compare the initial responses to the responses after artist identity revelation. For hypothesis 2 to be supported (technology group will show more positive attitudes towards AI-generated music after artists' identities revelation), the data should show significant differences between the initial responses and the responses after revelation. Out of the 30 participants, 23 participants express that they do not wish to change their responses towards both samples presented after revealing artists' identities. Still, a paired sample t-test is used to evaluate whether there is a mean difference between the initial responses and responses after revelation. In total, 7 pairs of responses towards AI-generated music are tested by obtaining the means of each component in the sampling survey. Response pairs 1, 2 and 4 belong to participants from the art group while the other pairs are from the technology group. Referring to **Table 3**, pairs 2, 3, 4 and 7 show a negative mean, showing that the overall score for the initial response is lower than the overall score for the response after artists' identities revelation. This revelation of positive shift in the attitude, however, was only statistically significant for pair 2. Throughout the study, there are no response changes for human-composed samples after the revelation. Overall, this study shows that hypothesis 2 is not supported. Although a stereotypic bias is found to exist in the art group, only one participant's change in response is significant. As a result, this study can only conclude that the stereotypic biases are not observed in participants' responses to changes **(Tables 1-3)**.

Table 1a: AI-generated music compared to human-composed music- perceived quality.

	AI		Human		df	t	Mean difference
	Mean	Std. deviation	Mean	Std. deviation			
Enjoyable	3.3462	0.97744	4	0.7698	52	-2.741*	-0.65385
Clear	3.5769	1.10175	4.0357	0.83808	52	-1.73	-0.45879
Coherent	3.2692	0.87442	4.1786	0.72283	52	-4.177*	-0.90934
Well-written	3.2692	1.11562	3.7857	1.03126	52	-1.768	-0.51648
Lively	3.3077	1.12318	3.75	0.92796	52	-1.582	-0.44231
Interesting	3.4231	1.23849	3.8214	0.81892	52	-1.404	-0.39835
Concise	2.8462	0.92487	3.3214	0.94491	52	-1.866	-0.47527
Comprehensive	2.9231	0.97665	3.3929	1.10014	52	-1.654	-0.46978
Informative	2.3462	1.23101	2.6429	1.22366	52	-0.888	-0.2967

Note: *p<0.05.

Table 1b: AI-generated music compared to human-composed music- perceived imaginativeness.

	AI		Human		df	t	Mean difference
	Mean	Std. Deviation	Mean	Std. Deviation			
Imaginativeness	3.1154	1.27521	3.5714	1.06904	52	-1.428	-0.45604
Creative	3.3462	1.23101	3.5357	1.0709	52	-0.605	-0.18956
Innovative	3.1154	1.24344	2.9643	1.0709	52	0.479	0.1511

Table 1c: AI-generated music compared to human-composed music- spatial presence.

	AI		Human		df	t	Mean difference
	Mean	Std. deviation	Mean	Std. deviation			
During the media experience how well were you able to observe changes in the tone of voice of the music you heard?	3.1923	1.05903	3.25	1.10972	52	-0.195	-.05769
How often did you smile in response to someone you saw/ heard in the media environment?	2.5385	1.30325	2.7857	0.99469	52	-0.787	-.24725
To what extent did you feel mentally immersed in the experience?	2.5769	1.02657	3.3571	1.0616	52	-2.742*	-.78022
How involving was the media experience?	2.6538	1.19808	3.3929	1.10014	52	-2.363*	-.73901

Note: *p<0.05.

Table 1d: AI-generated music compared to human-composed music- empathy.

	AI		Human		df	t	Mean difference
	Mean	Std. Deviation	Mean	Std. Deviation			
I could relate to the author of the music.	2.2692	1.11562	2.6071	1.13331	52	-1.103	-0.33791
I felt close to the author of the music.	1.9231	0.89098	2.4286	1.25988	52	-1.69	-0.50549
I felt empathetic towards the author of the music.	2.1154	1.07059	2.5357	1.29048	52	-1.297	-0.42033
I could identify with the author of the music.	1.7692	0.86291	2.5714	1.25988	52	-2.709*	-0.8022

Note: *p<0.05.

Table 1e: AI-generated music compared to human-composed music- musician's competence.

	AI		Human		df	t	Mean difference
	Mean	Std. Deviation	Mean	Std. Deviation			
Knowledgeable	3.1154	1.21085	3.2857	.93718	52	-.580	-.17033
Expert	3.1923	1.09615	3.6071	.87514	52	-1.542	-.41484
Intelligent	3.2692	1.25085	3.3571	.95119	52	-.292	-.08791
Gifted	3.3077	1.15825	3.4286	.79015	52	-.451	-.12088

Table 2: Art group and technology group subjects' initial attitude towards AI.

	AI		Human		df	t	Mean difference
	Mean	Std. Deviation	Mean	Std. Deviation			
Bad...Good	3.4167	0.66856	4.1667	0.61835	28	-3.152*	-.75000
With ill will ... With goodwill	3.1667	.38925	4.1111	.67640	28	-4.363*	-.94444
Not Beneficial ...Beneficial	3.7500	.75378	4.5000	.51450	28	-3.248*	-.75000

Note: *p<0.05.

Table 3: Initial responses and responses after artist identities revelation.

		Mean	Std. Deviation	Std. Error Mean	t	df
Pair 1	Initial1 - After1	0.25	0.43301	0.19365	1.291	4
Pair 2	Initial2 -After2	-1.318	0.32499	0.14534	-9.068*	4
Pair 3	Initial3 - After3	-0.016	0.64617	0.28897	-0.055	4
Pair 4	Initial4 - After4	-0.788	1.6081	0.71916	-1.096	4
Pair 5	Initial5 - After5	0.244	0.41783	0.18686	1.306	4
Pair 6	Initial6 - After6	0.068	0.9871	0.44145	0.154	4
Pair 7	Initial7 - After7	-0.038	0.66123	0.29571	-0.129	4

Note: *p<0.05.

CONCLUSION

Another aspect that is worth future research is the chosen population and the separation of the sampling groups. In this study, the ambiguous boundaries between the two sampling groups results in similar responses. Hence, future research could redefine the boundary for separating sampling groups using multiple factors or more specific and distinct conditions. For example, future research can change the condition of separating sampling groups from classes attended to a larger scale such as specific vocational schools attended. This study mainly focuses on the provider side of the field of AI generated music. As a result, the responses from the consumer side should also be evaluated for the reformation of AI IP right to be more comprehensive. This may mean to sample on a more broadly defined population such as the older generation. Nevertheless, AI generated music is a promising and evolving technology that is slowly progressing into daily life and therefore, requires further research to tackle upcoming challenges.

LIMITATIONS

This study had several limitations that yielded the collected dataset. The sampling survey contains a total of 24 items that the participants have to fill out. Prior to conducting the survey, the predicted time to complete each survey for the heard sample is approximately 3 minutes. However, when examining the actual survey submission time, it takes 4 to 5 minutes on average for participants to record their responses. As a result, the collected data might not fully reflect participants' initial opinions towards the presented music samples. The lengthy survey is also responsible for the observed trend mentioned in 4.3, where the majority of the participants express they did not want to change their responses after identity revelations. Since the survey for response changes is the same survey used for recording initial responses, it is highly possible that the participants did not want to spend extra time to fill out the survey again.

Another limitation that may explain the indifference between responses from the technology group and the art group is the ambiguous boundary that is set to separate the participants. Originally, PAS was chosen as the sample population as students is more responsive to technological changes than other local schools and the sampling groups are separated by the types of classes taken by each participant. However, the widespread use of technologies on campus actually results in an ambiguous boundary between the sample groups.

IMPLICATIONS

This study contributes to the current literature as it furthers the debate on whether or not AI has the ability to pass the Turing test with their generated creative works. As the majority of the items in the five components reveal no significant difference between human composed music and AI generated music, this study proved the possibility of AI to behave fully like human artists once the hardware technologies are matured enough. This finding presents a new voice to the field as previous researches have concluded that AI generated creative works are not able to pass the Turing test.

This study also reinforces the current literature by showing that AI is performing better as tools to support human artists than as individual artists. The data collected reveals that Perceived Imaginativeness and Musician's Competence shows no significant difference while Perceived Quality, Spatial Presence and Empathy reveals significant differences between human composed and AI generated music. This shows that AI is capable of assisting human creators in the preference component of creativity by providing human artists innovative ideas in creation but the quality of their work still requires human artists' domain-relevant skills for refinements. In addition, by comparing the response changes after artist identities revelation, this study observed a significant change between the initial and after responses. Although one response reveals a significant positive shift in the opinions, given the small sample size, this study can only conclude that the possibility for the future generation to support granting AI legal identities and thus granting AI IP rights is low.

FUTURE DIRECTIONS

As technology continues to advance, the performances for AI generating creative works will continue to improve. Therefore, there is a need to re-conduct a modified version of the proposed experimental setup in this study. To address the limitation where collected data do not reflect participants' immediate responses, future researchers can modify the used survey to adjust the length and items to be included in each component. Since the survey used for sampling the generated music is modified from surveys designed for sampling paintings, future researchers can also propose surveys that include specific items to evaluate the melody and rhythms for music samples.

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