Final Project: Measuring the Enjoyment of Art from Humans and Artificial Intelligence Agents

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Abstract

The study aims to investigate the difference in enjoyment between art created by humans and art created by artificial intelligence (AI). Participants were presented with a selection of art pieces, half of which were created by humans and half of which were created by AI. The participants were asked to rate their enjoyment of each piece on a scale from 0 to 10. Half of all AI art was presented as art generated from a human and half of all human art was presented as art generated from an AI. The results of the study showed that there was a significant effect of perceived enjoyment when the subject was told that an image was generated by an AI versus a human, which correlates with an in-group bias towards human artists even if they are truly not the creator of a particular piece.

*Keywords: Artificial Intelligent Art, Art Generation, Bias*

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**Literature Review**

When looking at human perception of art and how any piece could be rated personally on a scale of 0-10, there is already a substantial body of work found within the literature that is relevant to this study despite the fact that the phenomenon of artificial generated art is such a novel field of work. Areas of interest include in-group bias, the separation of art from the artist, and the controversial topic of who (or what) gets credit for artificially generated art pieces.

From the work of Steinhardt and McClaran, who studied the effect of narratives have on the perception of enjoyment of music, we can understand that the narrative or story that goes alongside any given stimulus can positively (or negatively) affect the amount a subject may enjoy a particular piece. One key concept to account for is the fact that Steinhardt and McClaran found a more notable impact on the enjoyment in a positive narrative presented alongside an already low scoring song, which is substantially different from presenting a neutral statement attributing a given work of visual art to a human or an artificial intelligence.

Due to the recent fact that art generated by an artificial intelligence is now being sold at a significant scale and AI art is also winning art competitions, Ziv Epstein, Sydney Levin, David Rand, and Iyad Rahwan dove into the fresh field of deciding who gets credit for art generated by an artificial intelligence. Due to the fact that many individuals anthropomorphize the creators of a piece of art, the authors of the research found that different individuals have varying degrees on how much that prescribe human attributes to an artificial intelligence. Additionally, the research of Epstein et al found that the perceptions of an AI and its anthropomorphized behaviors can be manipulated due to the language that goes alongside a stimulus.

Due to the nature of humans prescribing their enjoyment of art contrasting AI and human-generated art, it was imperative to look at the current literature on in-group bias. Pascal Molenberghs looked at the neuroscience of in-group bias. By completing a survey of the overall recent developments in social psychology, Molenberghs shared how in-group bias is not reliant “…on a single brain region or network, it seems that subtle changes in activation across the brain, depending on the modalities involved, underlie how we divide the world into ‘us’ versus ‘them’.” Molenberghs also spoke on how prevalent that bias truly is, which speaks to the reality to how directly the effects of in-group bias will be seen within this paper.

One area of in-group bias that was particularly fascinating was the role that gender plays in the prevalence of in-group bias. Women seem to have a preference towards other women more than men have a preference towards other men according to Laurie Rudman and Stephanie Goodwin. According to Rudman and Goodwin, “Four experiments confirmed that women’s automatic in-group bias is remarkably stronger than men’s and investigated explanations for this sex difference, derived from potential sources of implicit attitudes” Due to the fact that the scope for this paper and research had already been established, this isn’t taken into account within the methodology but, it should be noted that if this paper were to be replicated or expanded, capturing the sex of the subjects could lead to additional interesting results and datapoints that fall in line with the findings of Rudman and Goodwin.

**Methods**

The perception of human and AI generated art was investigated in a study conducted via an anonymous and secure online survey. Participants were recruited through Reddit and word of mouth to take the survey, which would present 40 images with a prompt. Subjects were then instructed to rate the enjoyment of the image after reading the corresponding prompt for each image.

Half of the 40 images presented were created by a human. 10 of these images were presented with the prompt, “This image was created by a human, please rate your enjoyment of the art.” The other 10 images were labeled with the misguiding prompt, “This image was created by an artificial intelligence, please rate your enjoyment of the art.”

The other half of the 40 images presented were created by an artificial intelligence. 10 of these images were presented with the prompt, “This image was created by a human, please rate your enjoyment of the art.” The other 10 images were labeled with the prompt, “This image was created by an artificial intelligence, please rate your enjoyment of the art.”

All of the artworks were created using a combination of machine learning techniques and were designed to mimic the styles of various human artists and different art styles. After viewing each artwork, participants were asked to rate the artwork on a 11-point Likert scale, with 0 indicating that they strongly disliked the artwork and 10 indicating that they strongly liked the artwork.

The data for each subject was split between 4 different datapoints for each different set of combination between the “artist” and “attributed” datapoints. The value for “enjoyment” is the average value for that subject and the given combination of artist and attributed.

|  |  |  |  |
| --- | --- | --- | --- |
| **Subject** | **Artist** | **Attributed** | **Enjoyment** |
| 1 | Computer | Computer | 3.888889 |
| 1 | Human | Human | 5.600000 |
| 1 | Computer | Human | 3.400000 |
| 1 | Human | Computer | 3.222222 |
| 2 | Computer | Computer | 7.800000 |
| 2 | Human | Human | 8.500000 |

Overall, 396 total responses were used in the analysis following simple data cleaning techniques. The data was then analyzed using an ANOVA, with conditions “artist” and “attributed” and participant rating as the dependent variable.

Overall, the results of this study provide insight into how people perceive human and AI generated art and may have implications for the future of art and technology.

**Results**

Using an ANOVA with a within-subject design between the “artist” and “attributed” variables and the average enjoyment as the dependent variable, the given table was generated.

Table

Description automatically generated

Additionally, a bar chart was generated to also look at the data through a more visual medium.

Chart, bar chart

Description automatically generated

As we can see from the ANOVA table, all effects were seen to be significant with a p < 0.05. This means that we can reject the null hypothesis and say that the in-group bias of humans is prevalent when viewing art. Whether a piece is actually created by a human or not, humans prefer art that is seemingly made by another human.

**Discussion**

The results of the present study provide support for the idea that humans generally prefer art that is seemingly made by another human over art that is generated by AI algorithms. This preference was evident in the significantly higher ratings that participants gave to human-generated art compared to AI-generated art and a significant p-value < 0.05 through an ANOVA.

These findings are in line with previous research on the perception of art and creativity, which has suggested that people tend to view art created by other humans as being more valuable and authentic than art created by machines. This may be because human art is seen as being the product of complex cognitive processes, such as imagination, emotion, and intentionality, that are not easily replicated by machines.

Overall, these findings have important implications for the future of art and technology. As AI algorithms continue to advance and become more sophisticated, it will be interesting to see if people's perceptions of AI-generated art change and whether it becomes more widely accepted as a legitimate form of art. It will also be important to consider the ethical implications of using AI to create art, such as the potential for AI to displace human artists and the need for clear attribution and credit for AI-generated artworks.

In conclusion, the present study provides evidence that humans prefer art that is seemingly made by another human over art that is generated by AI algorithms. These findings have implications for the future of art and technology and highlight the need for further research on the perception of AI-generated art.

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