**AI and Art**

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Art is defined as “the expression or application of human creative skill and imagination.” Despite this, we as humans have created programs that attempt to replicate human art with computers. Many call these programs artificial intelligence art generators and call the produced images, music, or writings art. Many, however, disagree with this and do not call it art, one of many controversies sparked by these programs. Despite the debate about them, these programs have become intertwined with both our use of computers and society.

A very simplified definition of artificial intelligence (AI) is “the simulation of human intelligence in machines.” Mixing this with the definition we have of art, we can define AI art as the simulation of expression or application of human creative skill and imagination in machines.

Most programs that use AI to create images operate based off text prompts and convert that text to an image that aligns with the prompt. For this to happen the program first needs to be trained using other images. This will act as a basis for the program to use elements from to create its image. The same thing is used for AI generated writing or music; the user enters a prompt, usually a few words or a sentence, and the computer creates the audio, text, or visual piece.

The main method of having computers generate art is the use of a general adversarial network or GAN. This system essentially generates images based on the prompt given by the user, as well as provided data. The system then attempts to discriminate between what is from the data set and what was created by the generator. By doing this the system trains itself to improve how it generates new instances of the provided data and in a way that adheres to the prompt.

Convolutional neural networks or CNNs perceive patterns and make them more prominent. This is done by training the program with certain images. The program then uses these images to find patterns and applies them to another image. An example is a program from Google called Deep Dream which does exactly that. In one instance it put dog faces all over the Mona Lisa. A neural style transfer or NST turns an image from one style to another. A picture can be turned into a cartoon image, or a realistic piece of art could be turned into an impressionist piece.

For the purpose of this paper, I will be talking about AI generated art in terms of ones that use a GAN and attempt to create whole new pieces or images instead of altering preexisting ones like an NST or CNN would. This process was developed over decades starting in the 19th century.

The first step of having machines generate art is to first have them recreate art made by humans. Many would say that automated art can be traced back to ancient Greece where there were possible machines that could write and play music. However, a more tangible example of automated art was created around the year 1800. Maillardet’s Automation, built by Henri Maillardet, was an automated machine which could produce three poems and four drawings. This, however, is considered automated art and although it was a machine producing the art, the original art was not being created by artificial intelligence.

In 1973, artist Harold Cohen created a program which is cited as creating the first real computer-generated image. The system was named AARON and would use a black marker to create drawings on paper. AARON worked inside a set of rules defined by Cohen. Cohen would set forms of people and items that AARON used to create its images. Eventually in 1995, AARON started working in color as well. As AARON was improved Cohen switched programming languages from C to LISP.

The making of computer-generated images continued and in 2013 Simon Colton created a program called the Painting Fool. This program creates pieces based on images and emotions because Colton believed that true art had to be creative and imaginative. At this point other programmers, musicians, and artists such as Google and Taryn Southern began using AI to generate images, writings, and music.

In the 21st century AI generated art has become very widespread. It has sold for thousands of dollars and won art competitions over human individuals art. Image generators have become intertwined in our digital society with apps and websites open for the public to use to generate images based on key words. Computer generated images are even available through social media apps such as Instagram.

With these programs being so widely used it is reasonable to assume that they have effects on us as individuals. Many argue that AI generated images allow individuals to express their creativity without needing to have the skills that would be otherwise necessary to do so. However, many also argue that using AI art generators takes away from the authenticity and human aspect of art, it is for this very reason that many refuse to call this process artistic.

There are many drawbacks to using these programs to generate music, images, or writings in place of human art. Along with this proposed lack of authenticity there is the aforementioned lack of skill. Many of these pieces generated by computers do simply lack the skill of other human artists. There are a lot of issues with the anatomy of these images and there are often problems the physics, shading, and accuracy to the prompt as well. There is less control and personalization over the final product than when working with a human artist as you are only putting in a few key words and finding the right words to specify what you want can be difficult. Many times, the program will misunderstand the prompt or ignore it all together. Another problem is that it is impossible to create the same image twice. If there is a character or scene that one wants to recreate from one image to another it is almost impossible to accurately do so with these programs.

There is another big issue that people run into, specifically when using computers to generate images in place of visual art. When trying to use AI generators to produce images of people of color, many are finding that the features are being changed or that the image generators are not properly depicting features of people of color. AI image generators will give them smaller noses, double eyelids, different hair textures, lighter skin, as well as change many other features. Many of these programs effectively whitewash people of color and in some cases have even caricaturize them.

Despite the cons of using AI image generators, there are some pros to using such programs instead of commissioning human artists. There is the obvious benefit of time as most of these programs can generate images much faster than humans can. Instead of waiting for an artist to sketch and finish a piece, one can have the image produced in a much shorter amount of time. And, if you don’t like the finished product, you can simply enter the prompt again and get another image. The image generators are also quite convenient as you can use them whenever you want, as many times as you want. Many times, these programs are free, or charge a small one-time fee to purchase compared to how much a single piece from an artist would cost.

As previously mentioned, many individuals use these programs to express themselves creatively without needing to put the same amount of practice, skill, or time into getting the finished product. In a similar way, many artists, fashion designers, interior designers, and architects use computer generated art to spark their own creativity. These programs serve as inspiration for their own projects, assisting them in creating their own art.

AI generated images have proven to have a large effect on artists. Although there is a benefit as many artists use AI for inspiration, there are still many ways that the programs negatively affect artists. A lot of artists protest and boycott AI in the place of art due to these issues and an overall fear of being replaced.

Computers are trained off preexisting art. They are fed human artist’s art and analyze those pieces in order to generate their own music, writing, or image. Sometimes, the program creator will train the program with their own art. Most of the time, however, this happens without the original artist’s approval. Many artists and non-artists alike consider this to be art theft. Platforms such as X (previously called Twitter) are planning to use art posted to feed their AI machines. Elon Musk, owner of X, stated “We will use the public tweets—obviously not anything private—for training… just like everyone else has.” Many artists have stopped using or posting on X for this very reason.

As mentioned, many see using AI art generators as more convenient or cheaper than commissioning artists. This obviously affects the number of commissions an artist will get. Many people don’t realize how many issues there still are with these programs and consequently the final product. Regardless, people still opt to use them over commissioning artists. Obviously, many people do realize these drawbacks and still support human artists, but one can only wonder how these programs will evolve and if they will one day replace artists.

Taking customers from artists is not the only way that AI art affects artists businesses. It has also completely revalued art. These programs create a lack of appreciation for music, writings, and visual art and consequently the price people are willing to pay for art is a lot lower. This effects artists ability to make a living through their art. As they find they need to lower their prices they then become overworked, needing to take on more commissions than they used to, that is if there is anyone commissioning them.

It is because of this that many artists, and non-artists alike, choose to boycott these programs and refuse to support those who call themselves AI artists. A lot of these AI artists will use programs to develop their art and try to pass it off as their own, not mentioning that they did not truly create it. Many have voiced their protest to this online and many artists feel the need to caption their posts, clarifying that their art is not AI generated. Not only will people try to pass off AI generated art as their own, but they will also sell it on platforms like Etsy and Redbubble as stickers or tee shirts. This causes another issue for artists as AI generated art will be bought instead of their own art that they put time and skill into.

This is not only causing social protest, but legal protections are being deeply discussed and put in place to limit AI’s impact on artists and our society as a whole, because of these issues. Especially about computer-generated pieces being allowed in art competitions. As much as I look forward to seeing how these technologies will evolve, I can only wonder how AI will continue to change our world and if computers will continue to replace humans as they have done in the past.

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