

ART AND MACHINE LEARNING  
CMU 2019 SPRING  
**PROJECT 1**  
Group 10

## U+1F940



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**DESCRIPTION**

## **Concept**

The main concept behind our project is to highlight the interference of digital art into the art world. We wanted to question whether machine learning is contributing to creating new art, or leading us down a path of uninspired art. This paradox is seen in the image we created, as we take an old renaissance piece and style transfer a piece of modern, abstract art onto it, to create something new. We look at whether this within itself is uninspired, as it takes art that already exists, and uses an algorithm to mix them, but also required human work in the process of trial and error and development of an algorithm to find new purpose in the mixture of the two pieces.

In using a Renaissance piece as the content image, we are using a piece from an era where new artwork flourished, and new types of art were explored. In a similar vein, using the newer photo of the Kusama piece for the style image, we are also looking at a new age of art where digital influence is significant, and we have the ability to again create new and exciting pieces through modern media. Mixing these two together, we combine old and new to create a piece that blends the elements of both eras, while communicating the grotesque influence of machine learning, a debatably less-inspired development in the world of art, to create something beautiful, but macabre.

## **Technique**

The technique to create this piece required a lot of tweaking to the weights of the different loss components in the algorithm, changing the style image, and changing the content image. We found that most content images, especially since most of our content images were from the same artistic era, would respond similarly to the same style image; because of this, a majority of our technique was rooted in using different style images on the same content image to find which style images were responded to the best. From there, we found a content image which conveyed the main idea of our project; using these two images, we tweaked the weights of the loss components and the number of iterations to find the exact influence of the style image on the content image that we were looking for.

The goal of our technique was to have an order to the way we produced images, as opposed to random trial and error. With a clear concept in mind, we were able to iteratively build the image we wanted, as we had a clearer understanding of how the algorithm worked the more we experimented with it.

## **Process**

Our process was iterative, as we experimented with many different types of style images, and with different values in the style transfer algorithm. Many images did not end up realizing the ideas in our heads that we set out with. The initial goal was to test the algorithm, finding pairs of style and content images that would mix well to produce something that was

visually successful. From there, we honed our idea, working more with older images for the content, and newer, digitally-inspired images for the output. We also attempted to style transfer an image onto a content image, then style transfer another image onto that, but it did not result in any successful images. Below are examples of failed images:



Another failed attempt was to take an image, style transfer another image onto it, then take that created image, and style transfer the original content image onto that, creating the following:



This resulted in some interesting images, although the outputs were blurred, and we found that many of the colors and patterns that the new image took on were localized to certain parts of the image, making them unsuccessful.

## Result

The final result is created from a 16<sup>th</sup> century Netherlandish print of Pieter Bruegel's *The Fall of the Magician* as the content image, and an image of a Yayoi Kusama sculpture as the style image. The result was not a random distortion of the Bruegel piece, but an intentional injection of visual elements from Kusama's work onto the Bruegel piece.



## Reflection

We chose this image for its depiction of death of classical art and its rebirth in the new digital age. It appears morbid and depressing, symbolizing that the well-respected renaissance period is behind us, and classical art risks being replaced as we progress into a new age of technologically-enhanced art. It's also ominous and frightening, resembling fear of the unknown implications of artificial intelligence, and its capability of thought and expression on the world of art.

## Reference

[1] <https://www.theartstory.org/movement-digital-art.html>

**CODE:** [https://github.com/grifftang/Art\\_ML\\_Project\\_1](https://github.com/grifftang/Art_ML_Project_1)

**RESULT:** see file in repository