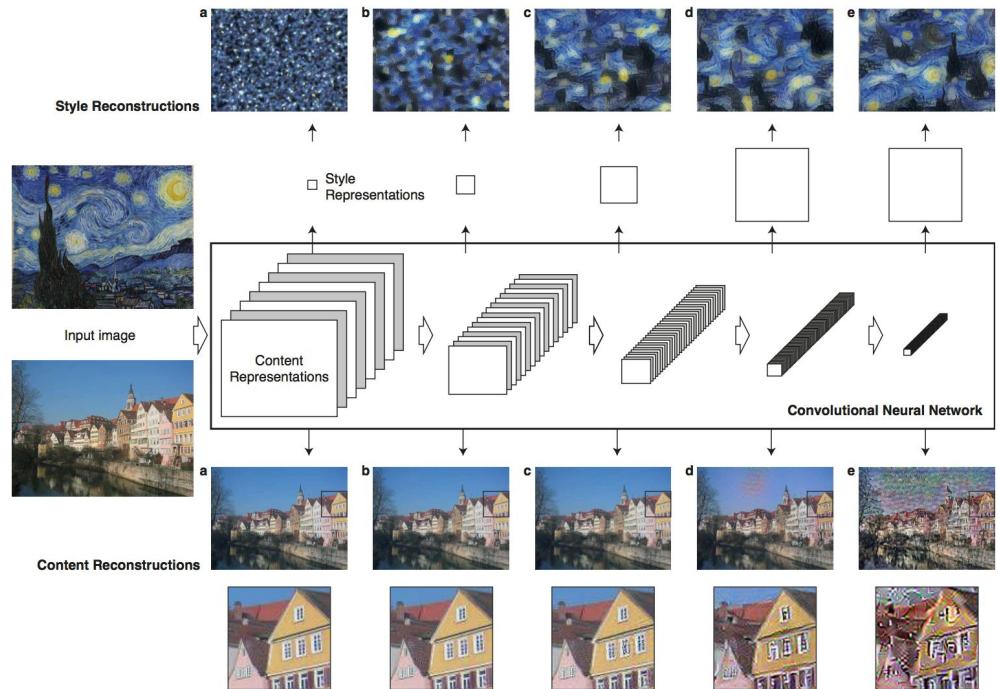


# Image Style Transfer Using Convolutional Neural Networks

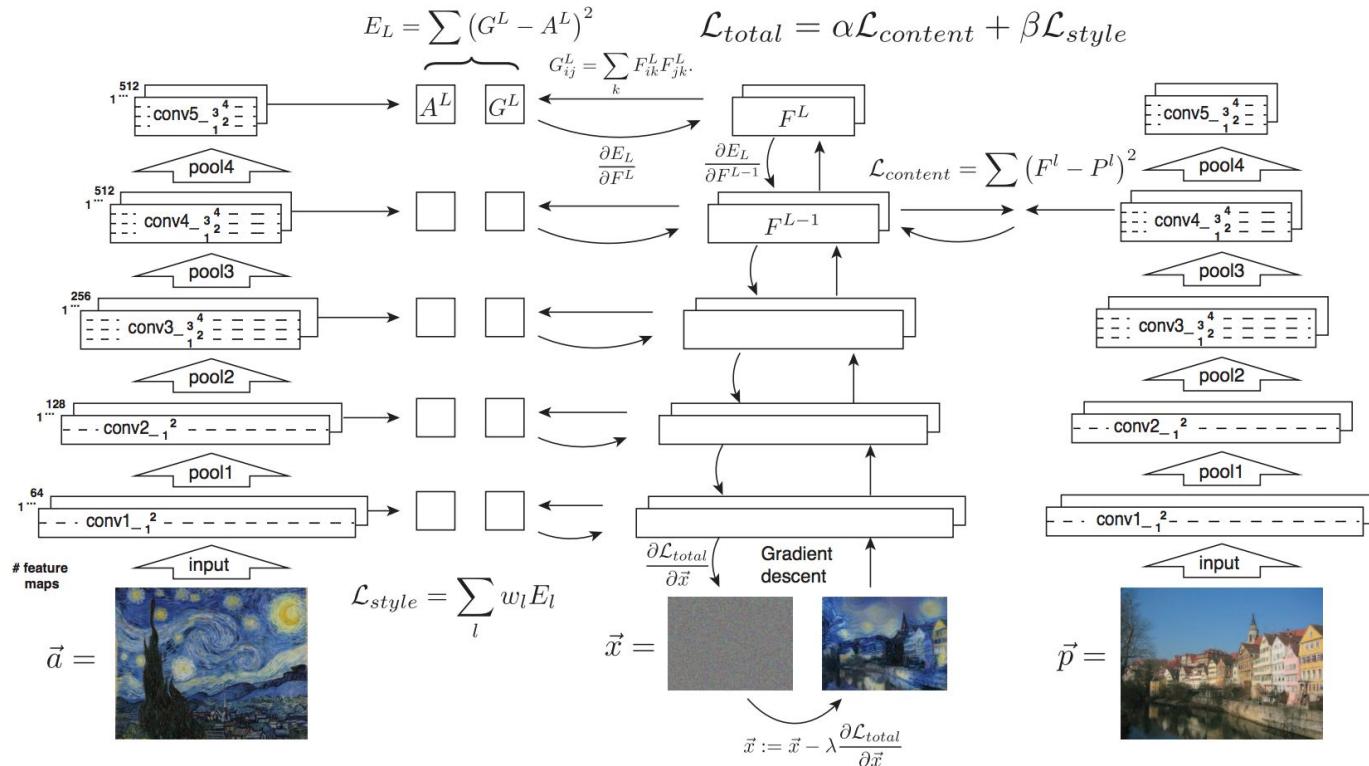
Luyao Zhou, Yujia Li

# Introduction

Deep Convolutional Neural Networks has produced powerful computer vision systems that learn to **extract high-level semantic information** from natural images ↳ a style transfer algorithm can **extract the semantic image content** from the target image and then **inform a texture transfer** procedure to render the semantic content of the target image in the style of the source image.

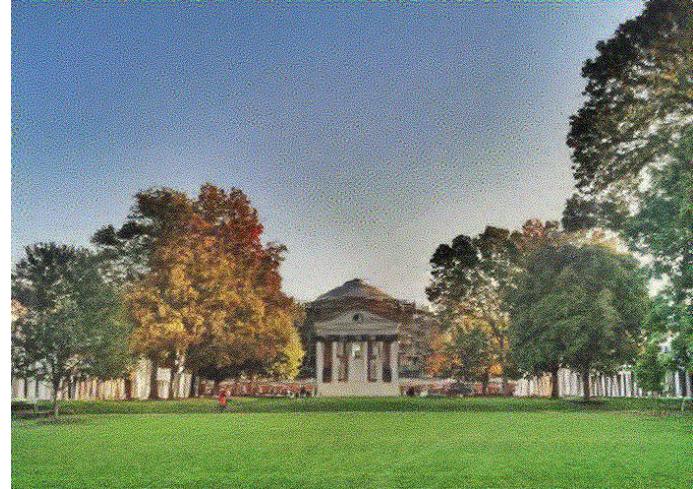
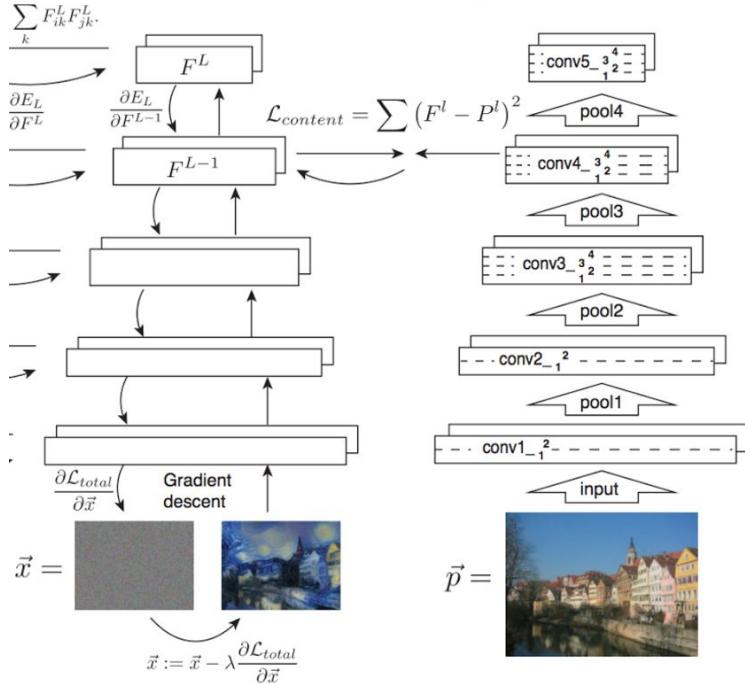


# Deep image representations

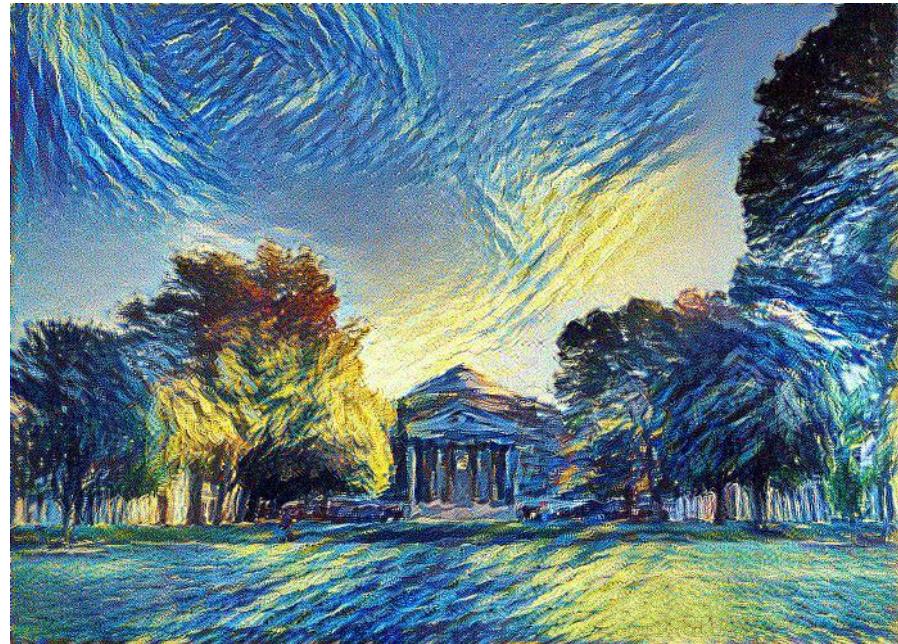
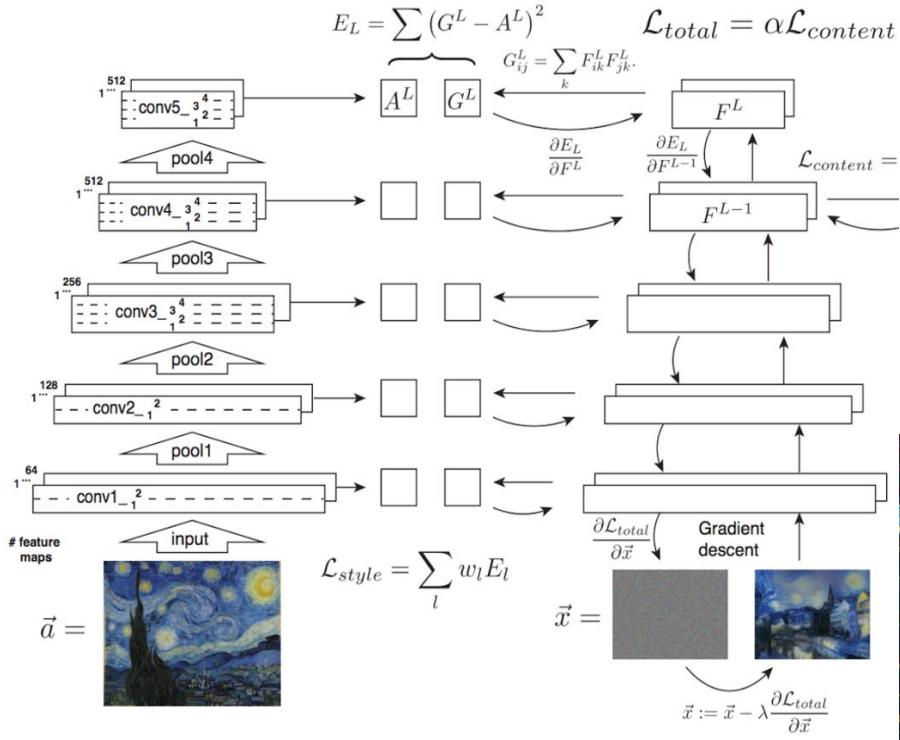


# Step 1: Content Reconstruction

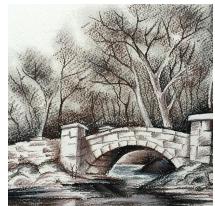
$$\mathcal{L}_{total} = \alpha \mathcal{L}_{content} + \beta \mathcal{L}_{style}$$



# Step 2: Style Transformation



# Examples: Different Styles



# Example: Content vs Style



Style weight = 0.1  
Content weight = 0.001

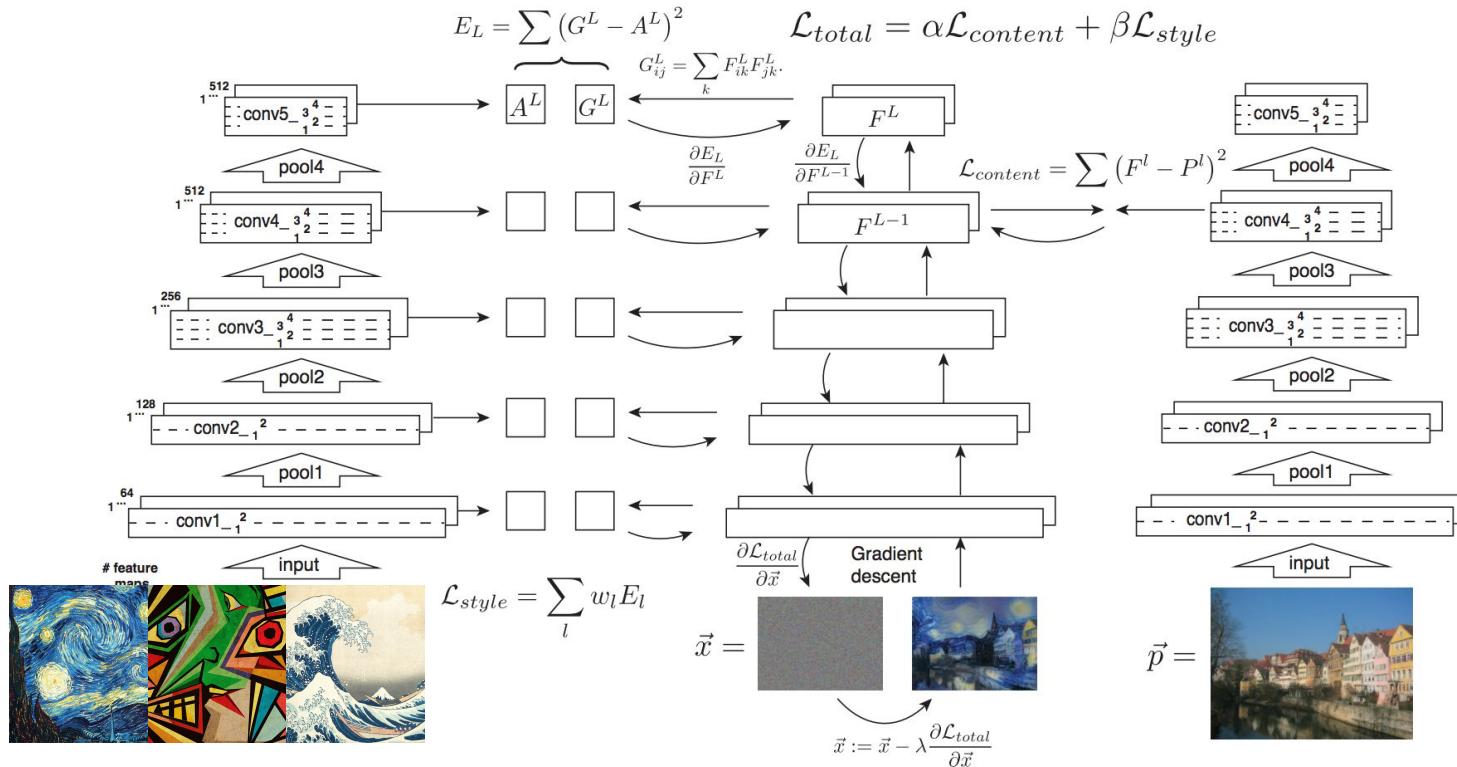


Style weight = 0.5  
Content weight = 0.001



Style weight = 1  
Content weight = 0.001

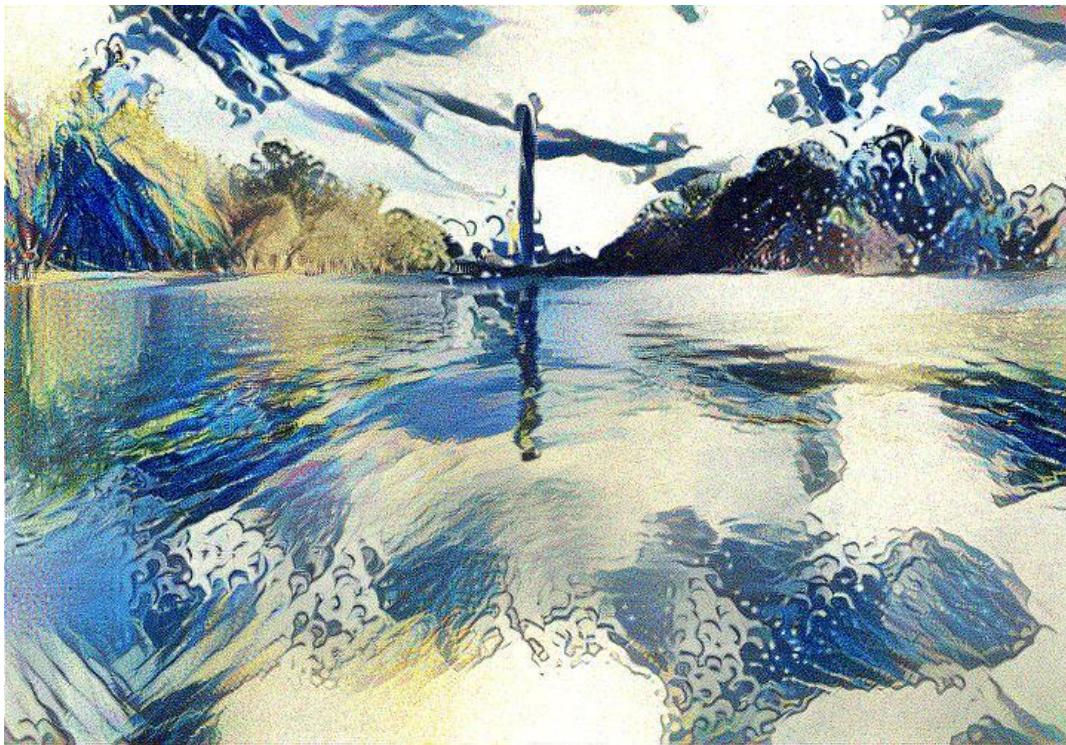
# Multiple Style Images



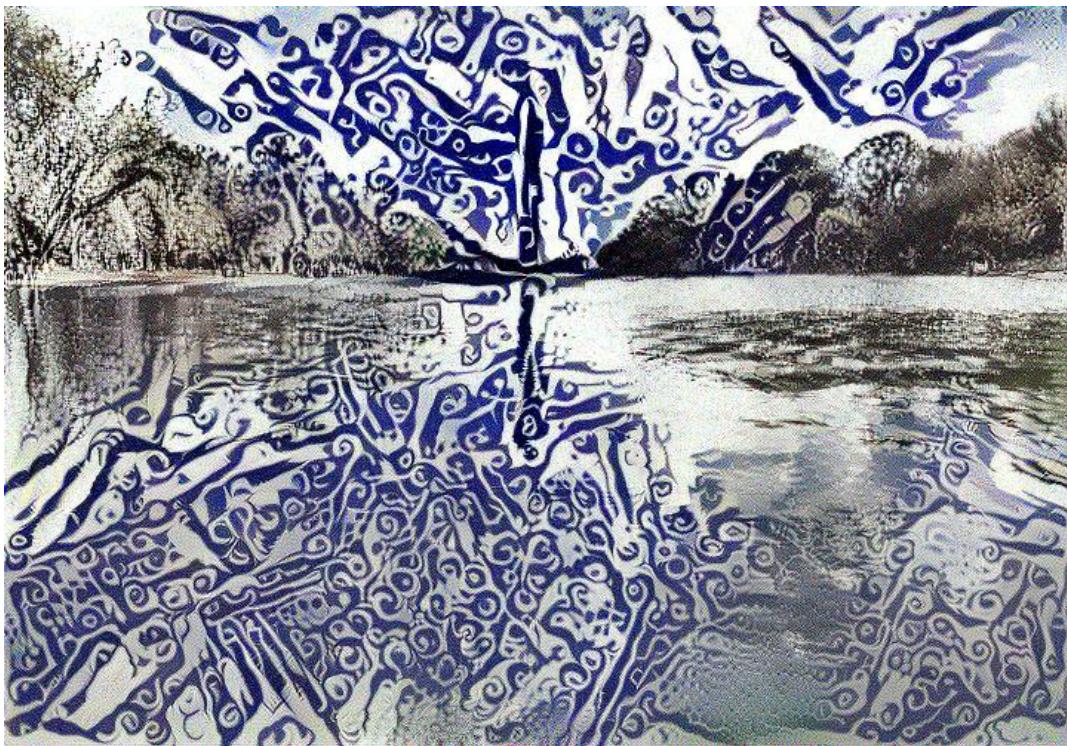
# Example: Multiple Style Images



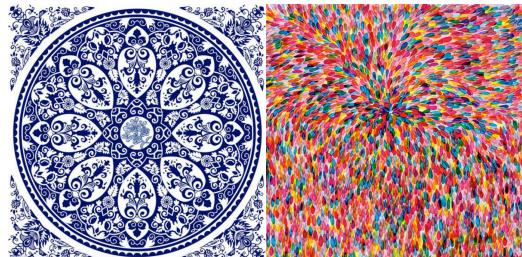
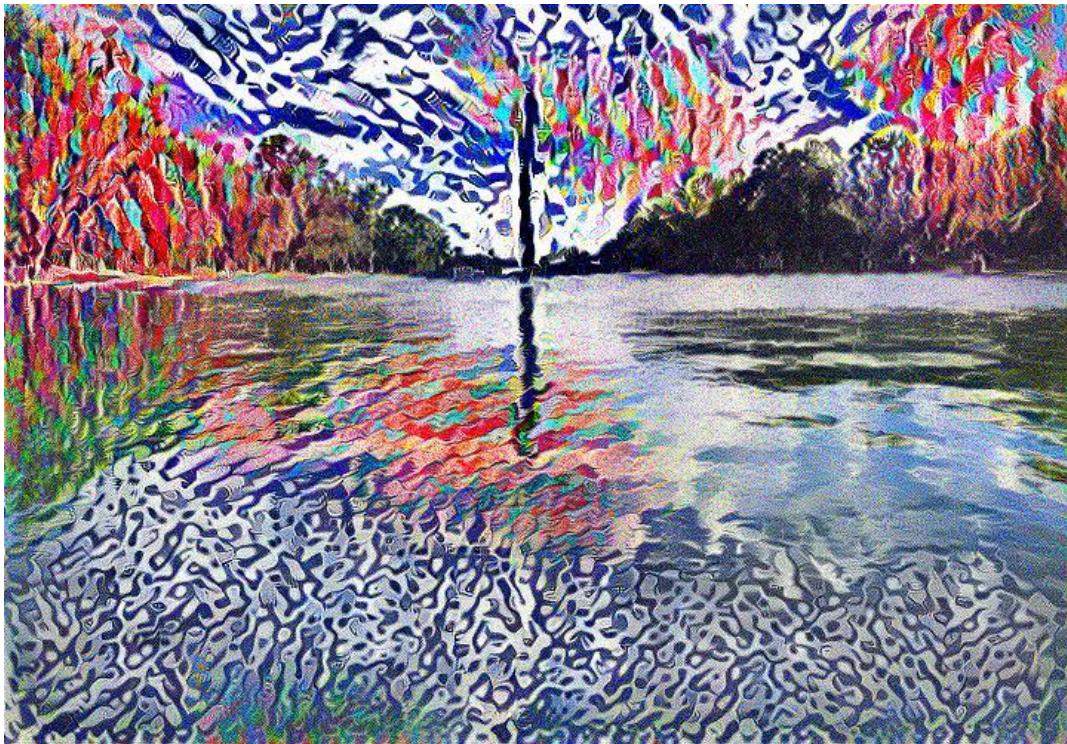
# Example: Multiple Style Images



# Example: Multiple Style Images



# Example: Multiple Style Images



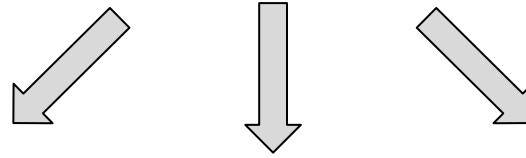
# Future work

## Style Transfer for Videos.

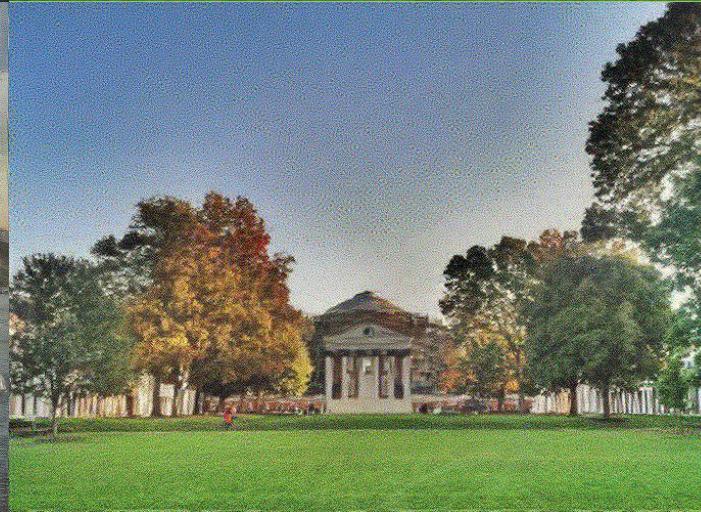
Cannot independently apply current method to the frames of video to create an artistic video.

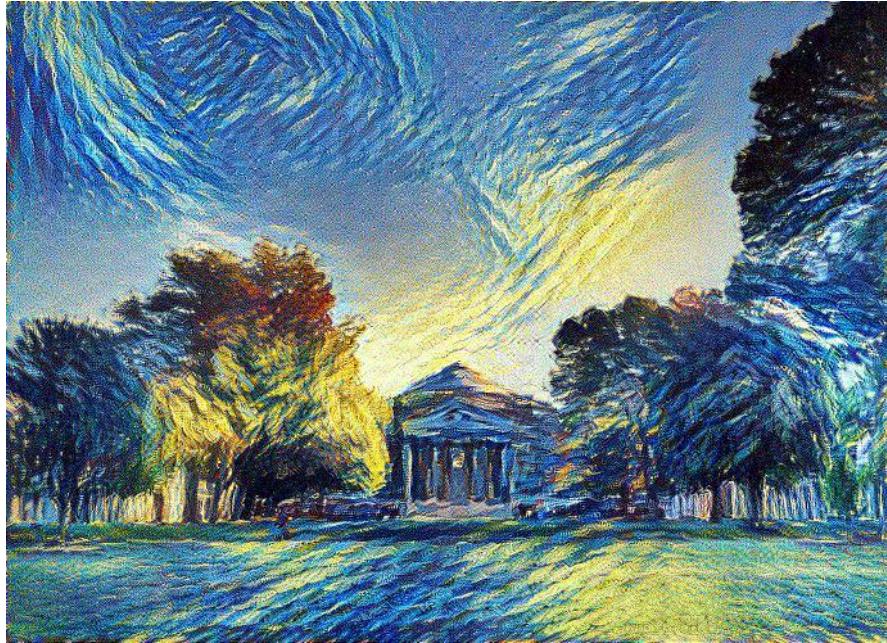
Artistic style should be applied the same way to the same object across frames.

Add constraints to preserve temporal coherence



# Questions?







Style weight = 0.1  
Content weight = 0.001



Style weight = 0.5  
Content weight = 0.001



Style weight = 1  
Content weight = 0.001

