

Art Style Replication

Introduction

The paper's objective is to use neural representations to separate and recombine the content and style components of any arbitrary images, which provides a neural algorithm for creating artistic images. We chose this paper because the idea of being able to learn the "style" of a piece of artwork was really fascinating, and we wanted to explore the DL structures that enable this learning.

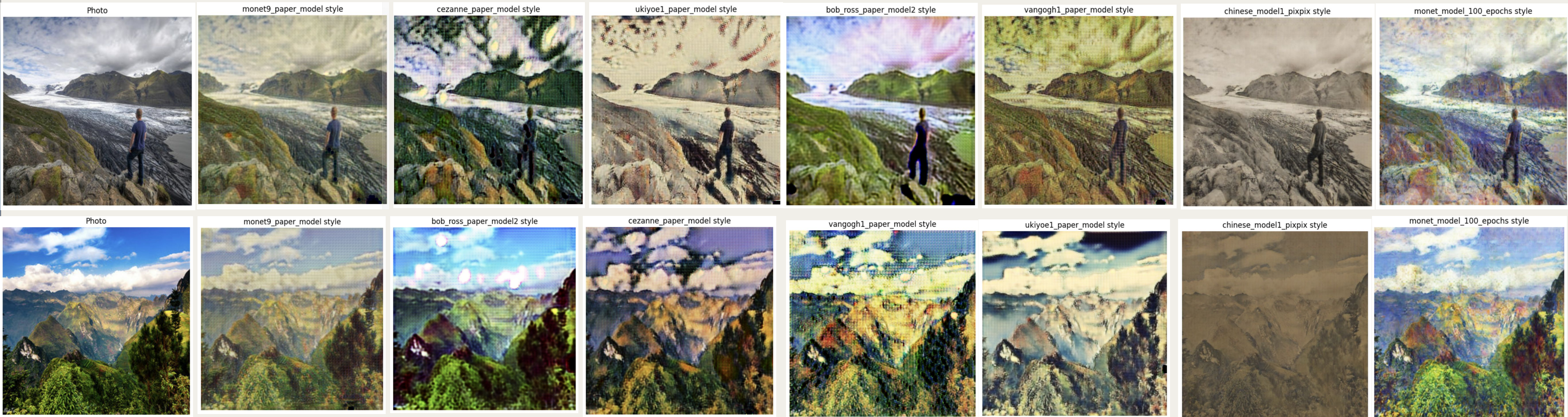
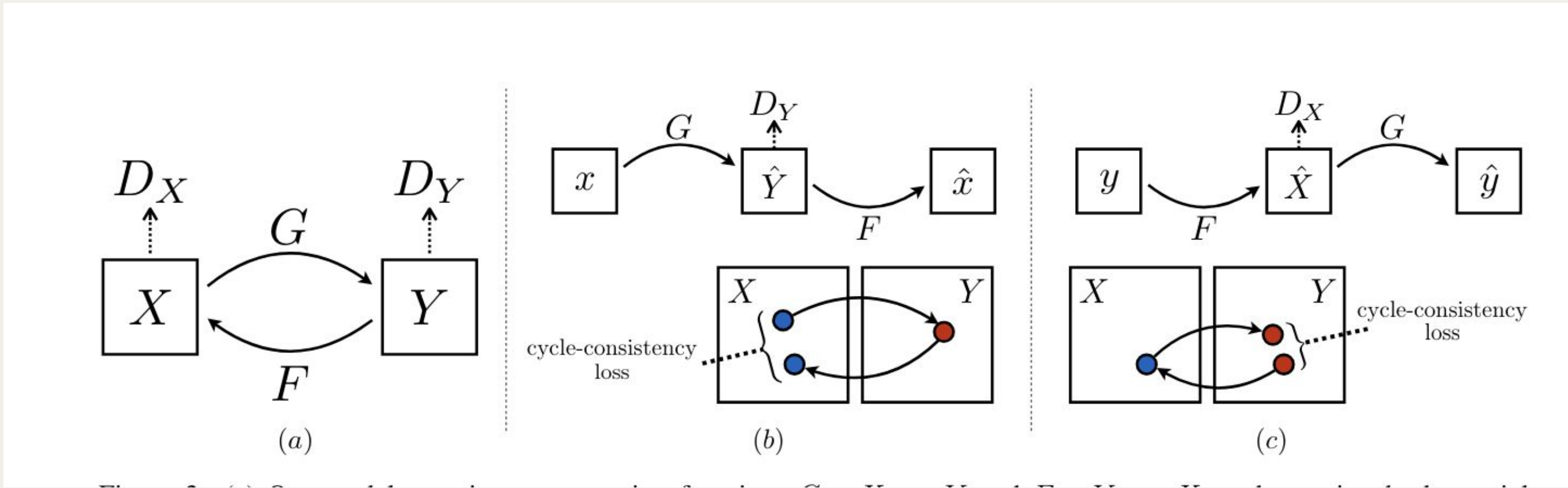


Fig. 1: Our results: input content images transferred to the artistic styles of Monet, Van Gogh, Cezanne, Ukiyo-e using datasets of their respective artworks.

Data & Preprocessing

Initially, we thought about using The MET's open source artworks to trian our model, both as the "content" and "style" inputs. However, as we progressed in building the model, we switched to using base landscapes as the "content" images, and different art databases to use for "style". For example, many of our "content" images are from Adobe Stock and many "style" images are from Kaggle. To preprocess, we simply standardized all images to the same size in each of the datasets.



Future Work

- **Model architecture:**
 - Our current model successfully transfers styles in terms of colors and textures.
 - We'd like to test future iterations on changes in geometric transformations (ex. geometric abstraction, surrealism).
 - Extend our model architecture to transfer art styles in animated images and video footage by applying our current process across multiple frames.
- **Dataset:**
 - Aim to train on larger datasets consisting of a more diverse spectrum of image content and styles; in doing so, we would also require more computational resources for preprocessing.
 - Instead of separating "content" and "style" inputs, we could explore further ways to adapt our model to utilise combined datasets.

Source

Original Paper: Jun-Yan Zhu*, Taesung Park*, Phillip Isola, and Alexei A. Efros. "Unpaired Image-to-Image Translation using Cycle-Consistent Adversarial Networks", in IEEE International Conference on Computer Vision (ICCV), 2017.