Style Transfering


Mireia Gartzia


Cristina González


Itziar Sagastiberri

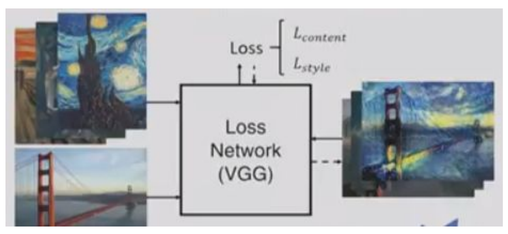

Carolina Fernández-Pedraza

UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH

Motivation

Style transfering

General approaches:

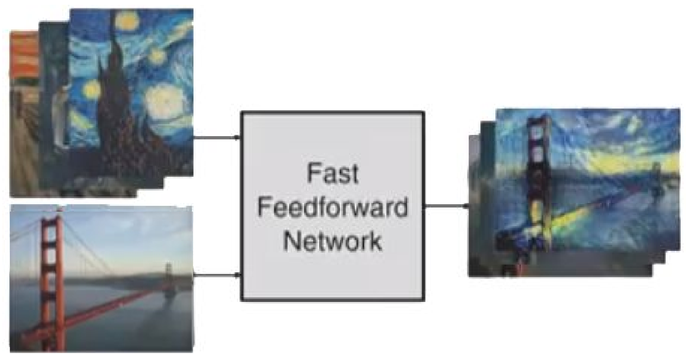


Desired attributes that these do not have:

Fast (able to work in real time) **Arbitrary**

Characteristics

Fast and Arbitrary style transfer:



- It takes as inputs of the feed forward network content and style images
- Our network extracts the features from the style images and applies them to the content images

Tested attributes:

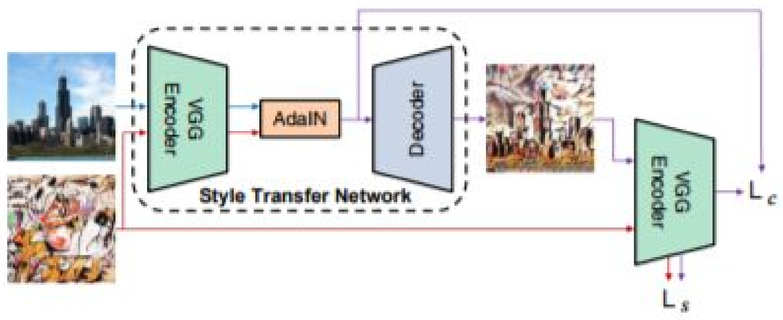
- **Arbitrariness -> Tested**

  Trained several styles at the same time and apply them to content images **Arbitrariness tested**

- **Fastness -> Not tested**

  Stylization of images rather than real time video from webcam.

Architecture

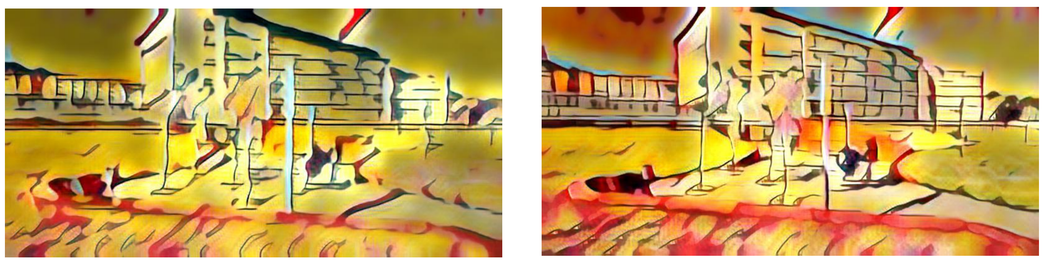


- Enconding of content and style images: VGG-19 model layers (up to relu4.1).
- An AdaIn layer is used to perform style transfer in the feature space.
- A decoder is learned (content and style loss computed) to invert the AdaIN output to the image spaces.
- The decoder mostly mirrors the encoder, with all pooling layers replaced by nearest up-sampling to reduce checkerboard effects.

Results

Increasing the number of epochs:

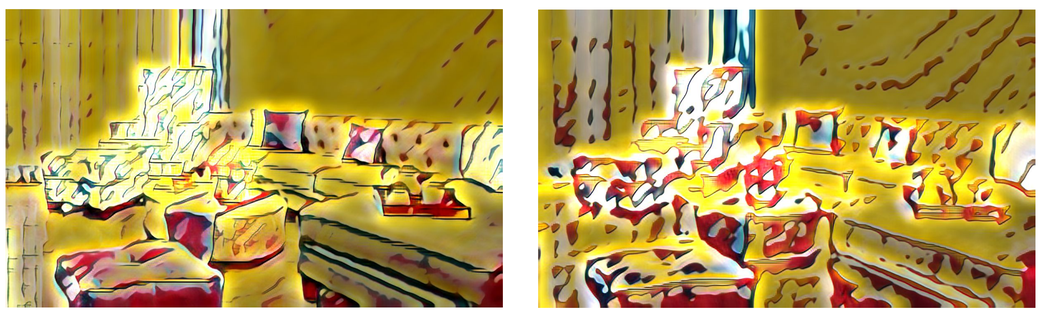
2000 7000



Increasing the style weight:

Content weight:1
Style weight: 1e-2

Content weight: 0.7
Style weight: 0.1



Changing the training dataset size

(2000 epochs)

Datset: 250 images

Datset: 50000 images

(Overfitting)