Neural Style Transfer

Neural style transfer is a computer vision technique consisting on applying the *artistic style* from one image into the content of another image. This way, the output image will have the intention of the artist who draw the content image, as if the artist who draw the style image painted it.

# How does it work?

The publication where neural style transfer was introduced is: <https://arxiv.org/pdf/1508.06576.pdf>

It is pretty much as applying Convolutional Neural Networks to an image. The trick resides on how the loss of the model is defined. In fact, the ***weights in NST are fixed***, which means we could use a pretrained model and never update its weights.

**So, what do we maximize?** In NST we maximize with respect to the input itself.

We know that a CNN allow us to have a representation of the image into what we call feature maps, that can actually be the size we desire. Therefore, what we are looking is for another image that have the convolved outputs as the original images.

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