Image Translation

Final Project Proposal

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1 Introduction

Image-to-Image translation refers to an area of Unsupervised Machine Learning, that aims to taking images from one domain and transforming them so that they have styles (or characteristics) of images from another domain.

Images can be easily related to each other, like Satellite Images to Map Images, and the problem could be solved by a Deep Neural Network, with simple input/output pairs. But, it can also be really hard to map images to each other, like paintings and real locations. And also images that might be almost impossible to map, like Horses to Zebras, as finding situations in which pairs of images where they would be in the same position and location would be extremely hard.

Our proposal is to follow the later, with solutions that base on GAN networks, in a way that it's able to learn not only the style, but characteristics of the image elements (Horse or zebra), and translate them to the other image, even if they are not directly mapped. In some approaches, this is also reversible.

2 Related Work

CycleGAN[1] aims to solve the last situation. By implementing two GANs, it aims to translate the images in both directions, and compare the differences between final and original images.

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References

[1] J.-Y. Zhu, T. Park, P. Isola, and A. A. Efros. Unpaired image-to-image translation using cycle-consistent adversarial networks. In *The IEEE International Conference on Computer Vision (ICCV)*, Oct 2017.