

Cartoon-to-real: An Approach to Translate Cartoon to Realistic Images using GAN

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Motivation

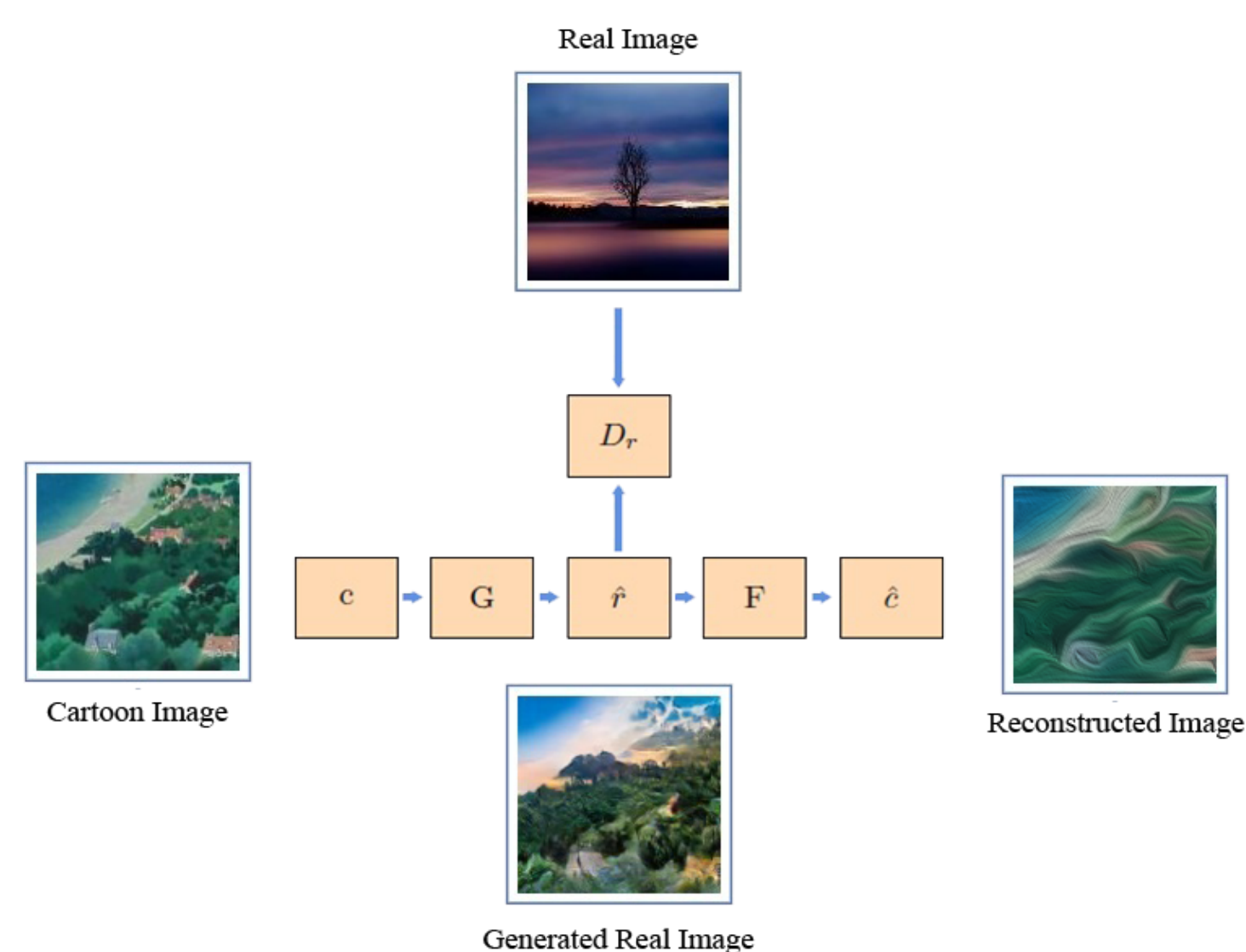
- Movies are one of the most important medium of recreation in everyday life. However due to the high cost, produces tend to make animated movies to cut cost.
- Film industries, in recent days, are remaking movies from the popular past cartoons and presenting them for current generation. Such an example is – the upcoming The Lion King (2019) from The Lion king (1994).



Contribution

- Translation of images from cartoon domain to photo-realistic domain using Cycle Consistency Loss [1].
- Two newly curated datasets.
 - For photo-realistic domain - extracted dataset from *Flickr*.
 - For Cartoon domain - extracted dataset from various *Japanese* movies

Methodology



- GAN[2] technique is used.
- Two discriminators, used for distinguishing real images from cartoon images.
- Two generators, G and F working for generating images of opposite domain in the following manner.

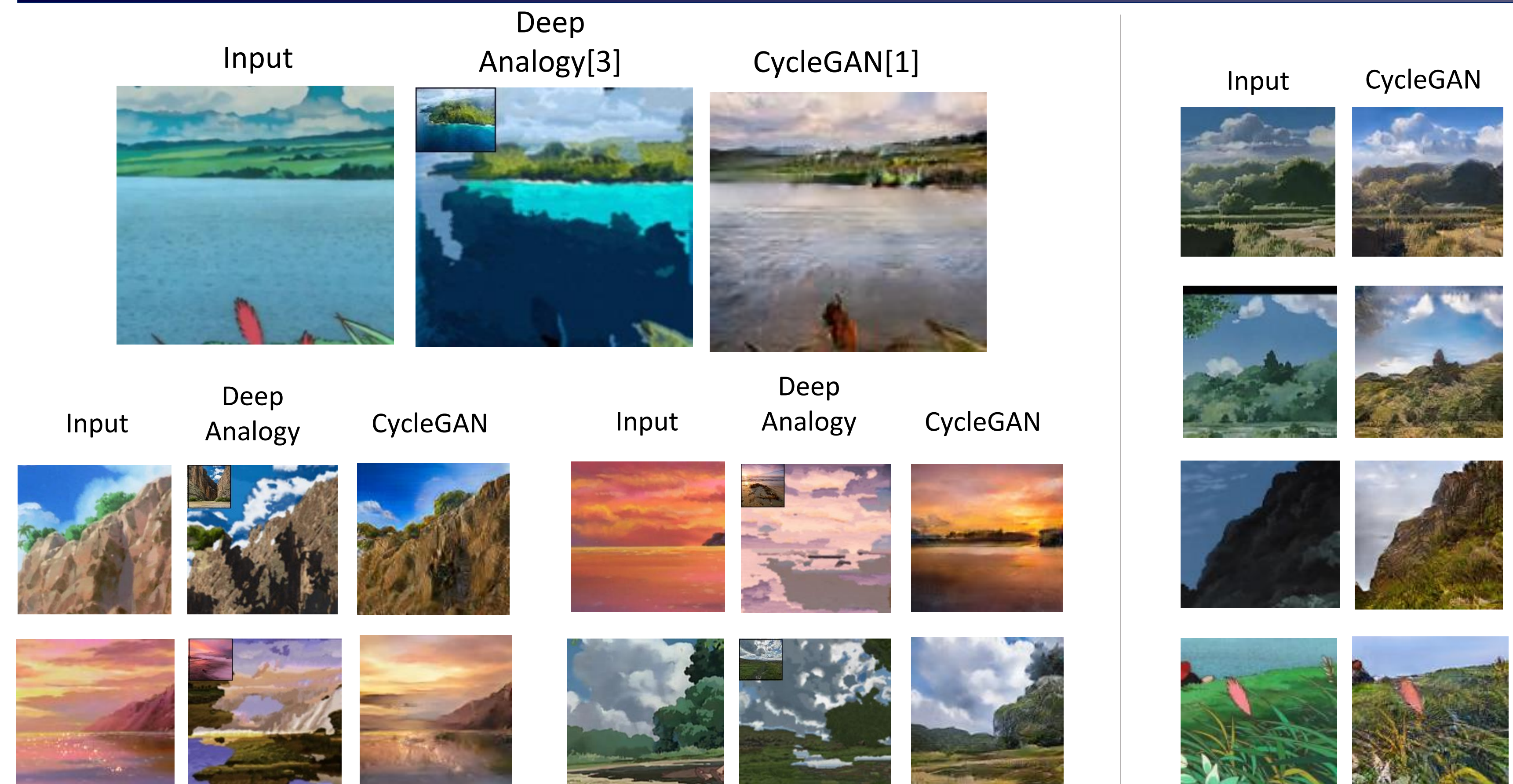
$$G: C \rightarrow R$$

$$F: R \rightarrow C$$

Notations:

r : Image of real domain
 c : Image from cartoon domain
 G, F : Real & cartoon image generator respectively.
 D_r : Discriminator for differentiating real images.

Result



Future Works

- Working on preserving the contents of the cartoon.
- Applying segmentation approach to make output more realistic.

References

- [1]. J.-Y. Zhu, T. Park, P. Isola, and A. A. Efros, "Unpaired image-to-image translation using cycle-consistent adversarial networks,"
- [2]. I. Goodfellow, J. Pouget-Abadie, M. Mirza, B. Xu, D. Warde-Farley, S. Ozair, A. Courville, and Y. Bengio, "Generative adversarial nets," in Advances in neural information processing systems, 2014, pp. 2672–2680.
- [3]. J. Liao, Y. Yao, L. Yuan, G. Hua, and S. B. Kang, "Visual attribute transfer through deep image analogy," arXiv preprint arXiv:1705.01088, 2017.