cs6475_neural_style

Literate Python implementation of 'A Neural Algorithm of Artistic Style'

Github (https://devhub.io/link?target=https%3A%2F%2Fgithub.com%2FHodapp87%2Fcs6475_neural_style)

Developer (https://devhub.io/developer/Hodapp87)

2 years after

cs6475_neural_style

This was a final project for CS6475 (http://www.omscs.gatech.edu/cs-6475-computational-photography) at Georgia Tech. Most of the material here is duplicated in `final_report.tex` and in the Python notebook.

Goal

The goal of this project was to create a literate implementation (as in literate programming (https://en.wikipedia.org/wiki/Literate_programming)) of the algorithm described in the recent paper, A Neural Algorithm of Artistic Style (http://arxiv.org/abs/1508.06576) by Leon A. Gatys, Alexander S. Ecker, and Matthias Bethge.

The paper is sufficiently well-known by now that it has many open-source and commercial implementations that are quite good:

- https://github.com/jcjohnson/neural-style (https://github.com/jcjohnson/neural-style)
- https://github.com/kaishengtai/neuralart (https://github.com/kaishengtai/neuralart)
- https://github.com/andersbll/neural_artistic_style (https://github.com/andersbll/neural_artistic_style)
- https://github.com/fzliu/style-transfer (https://github.com/fzliu/style-transfer)
- https://github.com/woodrush/neural-art-tf (https://github.com/woodrush/neural-art-tf)
- https://deepart.io (https://deepart.io)

However, I found that many of these lacked clear explanations on why they were implemented how they were. The hope was that students in CS6475 (and maybe CS4495/CS6476 (http://www.cc.gatech.edu/~hays/compvision/)) could understand and use this implementation, starting from their existing familiarity with Python, NumPy, SciPy, and OpenCV in the algorithms of computational photography.

Notebook

The eventual result was an IPython notebook (via Jupyter (https://jupyter.org/)) which gives a simplified (but still functional) example of how to actually implement this algorithm with Caffe (http://caffe.berkeleyvision.org/).

That notebook is available in ["Neural Algorithm of Style" Notebook.ipynb](./"Neural Algorithm of Style" Notebook.ipynb) in this repository. The conversion of this to a PDF is available in neural-style-notebook.pdf (./neural-style-notebook.pdf).

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