

Development of creative AI Neural Style Transfer (NST)

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Last resort creative AI

In this project we want to present the development from **deep dream** towards **NST**. Creative AI is one of the wonderful byproducts of deep neural networks. We show cost functions and visualize intermediate steps during reconstruction of the result image. In recent past the measure of intelligent behavior was based on turing tests or playing board games. Basically skipping the act of creating art.



Rumors that human intelligence prevail today. Though this might

Motivation

The psychedelic images produced by deep dream catted our interest. Two main approaches exist to merge the style of a style image with a content image. One approach uses the activation from a pretrained network and dependent on this network the results are somewhat preprogrammed. An Inception V3 model with weights from imangenet has a strong representation of dogs and cats and is therefore prone to merge eyes and hairs into images. With NST the images can be chosen freely.

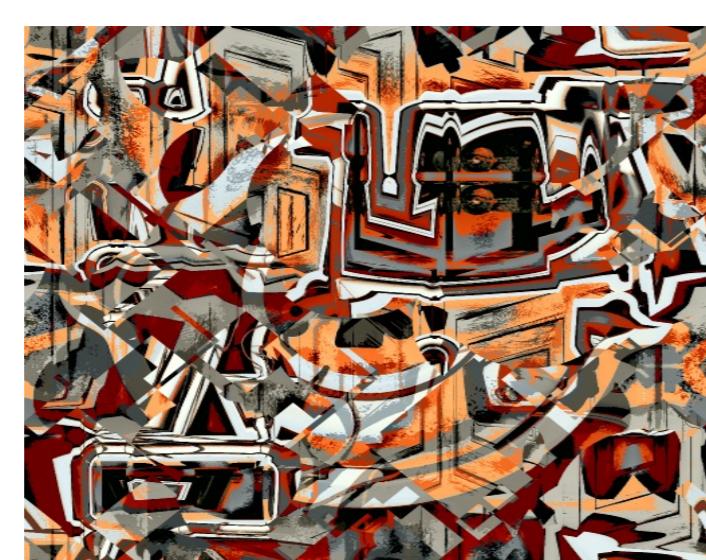


Preparation of Data

As input we use 3 channel RGB 8 bit color images. The content images show familiar known objects like houses, humans, food or outdoor scenes. The style images for NST should contain strong pattern, colors, painting styles or abstract art for best results. In case of controlled dreams a content image can be used as guide as optimization objective.



Content



Style

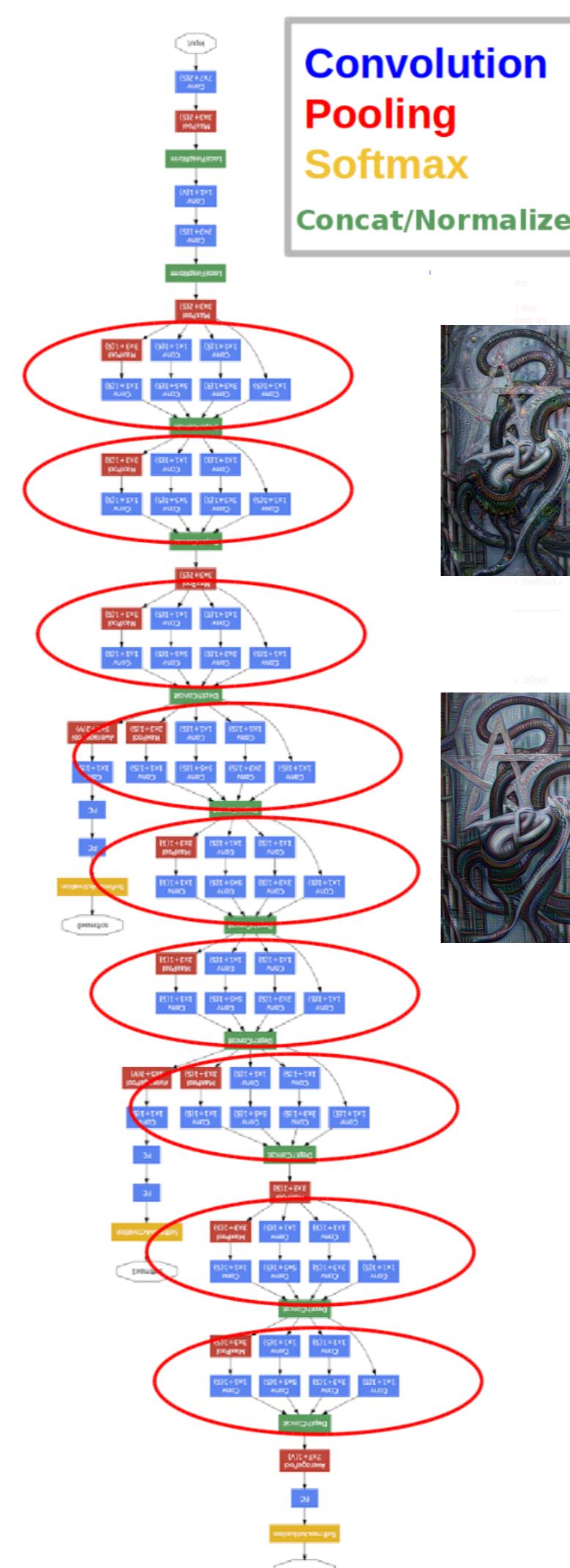
References

- o Deep Learning mit Python und Keras: Francois Chollet, mitp
- o Python Machine Learning, Sebastian Raschka & Vahid Mirjalili, Packt
- o Image Style Transfer Using Convolutional Neural Networks, Leon A.Gatys e.Al.
- o <https://github.com/google/deepdream>
- o Neural Style Transfer: A Review, Yongcheng Jing, e.Al.
- o Going deeper with convolutions, Christian Szegedy, e.Al (GoogleLeNet)

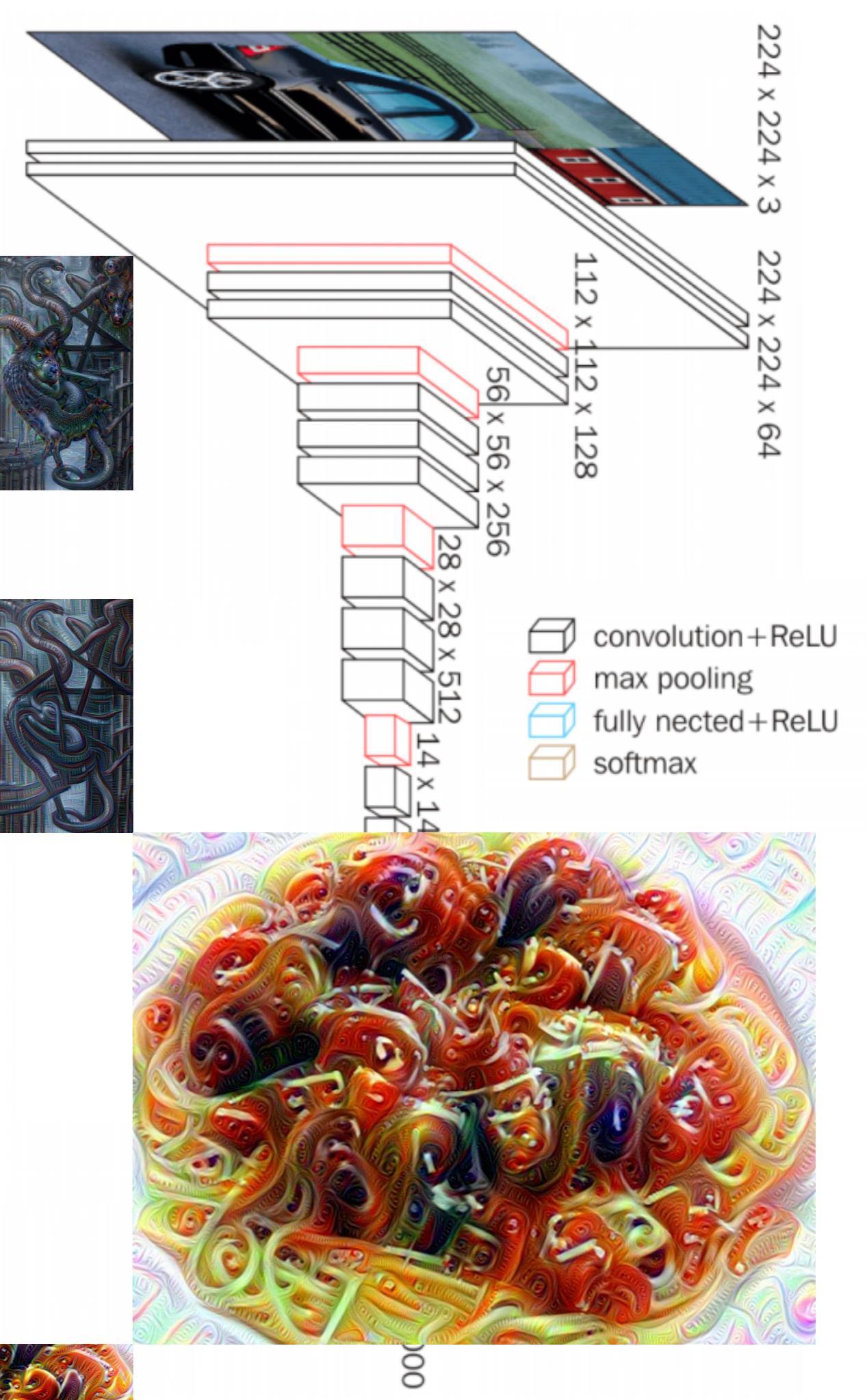
NN for deep dream and NST

xxxxxxxx xxxx xxmages produced by deep dream catted our interest. <https://towardsdatascience.com/a-simple-guide-to-the-versions-of-the-inception-network-7fc52b863202>

Inception, deep dream



VGG19 Net, NST



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Loss functions for deep dream and NST

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