REMember: A Deep Dream Batch Program for Multi-frame Formats

COSC445 Fall 2017

Madison Blake, Joshua Hickman, Axel Hranov, and Matthew MacNeil

Motivation

Our goal: to process a given video by frame using a neural network with adjustable parameters.

- Image processing via neural network
- Process individual frames in a video
- Animation of effects of neural network processing
- Script that processes different formats by frame
- How can the image be improved?

Why

- Allows us to visualize patterns in images
- Shows how neural networks classify images
- Functional resemblance between artificial neural networks and particular layers of the visual cortex
- The network can be trained to identify certain images

Dreaming

- Any image can be used
- More detail = Better Outcome

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http://web.eecs.utk.edu/~ahranov/cs445/pasta.gif

GIF too big for Google Slides (135 MB)

Guided Dreaming

- Give another image as a guide.
- NN will match patterns from the second image rather than the images it was trained on.

Input Image

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Guide Image

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Data

Limiting process to certain layers of neural network produces widely different results

conv2_3x3

conv2_norm2

inception_3b_3x3

inception_4a_5x5

inception_4b_1x1

inception_4d_3x3

Caffe

Issues Encountered:

- Caffe
- IPython Notebook

Limitations:

- Input/output formats
- Command line interface only

Conclusions

And Future Work

Produce more file formats.

Graphical User Interface.

Training new Neural Networks.

Make your own dreams:

https://deepdreamgenerator.com/

Descend into madness:

http://web.eecs.utk.edu/~ahranov/cs445/mockus.php