SEARCH

RESOURCES

CONCEPTS

10. Notebook: Visualizing a Pooli...
11. Fully-Connected Layers, VGG...
12. Notebook: Visualizing Fashio...
13. Training in PyTorch
14. Notebook: Fashion MNIST Tr...
15. Notebook: FashionMNIST, So...
16. Review: Dropout
17. Notebook: FashionMNIST, So...
18. Network Structure
19. Feature Visualization
20. Feature Maps
21. First Convolutional Layer
22. Visualizing CNNs (Part 2)
23. Visualizing Activations
24. Notebook: Feature Viz for Fa...
25. Last Feature Vector and t-SNE
26. Occlusion, Saliency, and Guid...
27. Summary of Feature Viz
28. Image Classification & Regre...

Deep Dream

DeepDream takes in an input image and uses the features in a trained CNN to ar detected features in the input image! The process is as follows:

1. Choose an input image, and choose a convolutional layer in the network wh to amplify (the first layer will amplify simple edges and later layers will amp features).
2. Compute the activation maps for the input image at your chosen layer.
3. Set the gradient of the chosen layer equal to the activations and and use th gradient image.
4. Update the input image and repeat!

In step 3, by setting the gradient in the layer equal to the activation, we're telling weight to the features in the activation map. So, if a layer detects corners, then th image will be amplified, and you can see such corners in the upper-right sky of th below. For any layer, changing the gradient to be equal to the activations in that features in the given image that the layer is responding to the most.

DeepDream on an image of a mountain.

Style Transfer

Style transfer aims to separate the content of an image from its style. So, how do

Isolating content

When Convolutional Neural Networks are trained to recognize objects, further la extract features that distill information about the content of an image and discar information. That is, as we go deeper into a CNN, the input image is transformed that increasingly care about the content of the image rather than any detail abou of pixels (which is something close to style).

You may hear features, in later layers of a network, referred to as a "content rep image.

Isolating style

To isolate the style of an input image, a feature space designed to capture textur This space essentially looks at the correlations between feature maps in each lay correlations give us an idea of texture and color information but leave out inform arrangement of different objects in an image.

Combining style and content to create a new image

Style transfer takes in two images, and separates the content and style of each o