deeplearning.ai

Neural Style Transfer

Content cost function

Content cost function

$$J(G) = \alpha J_{content}(C, G) + \beta J_{style}(S, G)$$

- Say you use hidden layer l to compute content cost.
- Use pre-trained ConvNet. (E.g., VGG network)
- Let $a^{[l](C)}$ and $a^{[l](G)}$ be the activation of layer l on the images
- If $a^{[l](C)}$ and $a^{[l](G)}$ are similar, both images have similar content

l is chosen so its neither too shallow nor too deep

$$J_{content}(C, G) = \| a^{[l](C)} - a^{[l](G)} \|^2$$

↳ element wise sum of squared differences

∴ when you use gradient descent to min $J_{content}$, we will try to get $a^{[l](C)} \approx a^{[l](G)}$

[Gatys et al., 2015. A neural algorithm of artistic style]