Notes (Deep learning with Python: Francois Chollet)

* Deep dream algorithm developed by Google works in similar fashion as filter visualizations in layers of Convolutional Neural Networks. It tries to simultaneously maximize the activations of set of high level layers by gradient ascent on input image.
* Instead of blank image, a pre-existing image is being used as input images.
* Input images are processed at different scales (called octaves) to get better quality visualizations.
* Convolutional base of inception v3 model trained on Imagenet is being used.

Strategy used in code

* Defined set of weights for each mixed layer such that weighted sum of L-2 norms for each layer could be taken.
* Inception-V3 model is imported and kept untrainable.
* Loss function is defined and scaled by product of output shape of layer.
* Input image is hold in variable ‘Dream’
* Gradients are calculated for loss function using variables as ‘Dream’ tensor
* Gradient is normalized by maximum value.
* Function is being defined that can return back value of loss and gradients when an tensor of image is inputted.
* Gradient ascent function defined that modify and return image tensor ‘x’ until loss function becomes greater than a specified ‘max\_loss’ value.