Neural Style Transfer using pretrained CNN (VGG-19)

1. Load the VGG-19 network.
2. Create a function which converts image into tensor.
3. Create a function which reconverts tensor back into image.
4. Create a function which can extract feature maps from the VGG-19 model given a tensor
(‘conv1_1’, ‘conv2_1’, ‘conv3_1’, ‘conv4_1’, ‘conv5_1’ – Style features
‘conv4_2’ – Content features).
5. Calculate the total loss, given functions which can calculate Content loss and Style loss. To calculate style loss, we need to create a function which can calculate correlation across different channels of all the Style feature maps.
6. We can either use a content image or white noise (target image) to arrive at the generated image. We update the individual pixelvalues of the target image by using the gradients calculated using the total loss through Backpropagation (Gradient descent).