Documentation

The challenge was to train a model that takes 512x512 image as input and outputs desired number of images similar to the input in the dataset.

I have used a Convolutional Auto encoder to solve this problem.

The model has a total number of 30 convolutional layers (encoder +decoder)

I solved this problem by trying to reconstruct the training images. In the training process the model encodes the input and tries to reconstruct the image by using feature map at encoding layer.

In this way each images can be converted into a feature vector. We can compare this feature vector of the input image to the feature vectors of other images in the dataset to find similar images.

I have used Annoy index to compare the images.

Approximate Nearest Neighbours is used to search for points in space that are closer to a given query point. I used Annoy to save all the latent representation of all the training samples. Given a query image, we will compute the latent representation for the given image and compare it with all the encoded representations to find similar images.

This is the basic concept behind the approach is used.

**Code Usage**

I have trained the model with model\_training.ipynb file. This file saves the final model as well as improvements in the Model.

The above saved model is loaded in the search\_similar\_image.ipynb file to generate feature vectors of all training images and these vectors are stored with indices in feature.pickle file. Later these features are used to create Annoy index

At the end of search\_similar\_image.ipynb you can give an input image and it finds similar images.