Machine Learning Engineer
Task Challenge

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Problem Statement
You are provided with a dataset of ~5k 512x512 images, your program should accept an 512x512 input image and return N images from the provided dataset similar to the input image.

I did this using the technique Transfer Learning. In this task, we find similar images by dissecting the weights of image-object classifier VGG and using it to extract feature vectors from the given dataset to find the similar images to an input image.

Steps for finding similar images:

- From the given dataset, put all the images into the training folder inside the dataset directory and then choosing randomly an image from the training folder images to select it as a query image and putting it in a testing directory inside the dataset directory.
- Load the trained VGG model and remove the last layers.
- Convert the training images into feature vectors using dissected vector.
- Perform inference on our image vectors for the generation of flattened embeddings
- Compute the similarities between our images feature vectors using an inner product cosine similarity. We used KNN Algorithm.
- For the query image selected randomly inside the testing folder of dataset, the top k=9 similar images are found as per the rank of the images based on the top similarity scores.

Output is shown for the query image in the vgg19 directory inside the Output directory. Query image is generated randomly from the given dataset and can be found inside the testing directory inside the dataset directory.
Screenshots of the program running in my terminal are found inside the screenshot of terminal directory.

Dear Team,
Please let me know the feedback for my work to your assigned task.
Thank You!