Coursework 8

Discriminator

In this coursework, we classify images of 17 people. You can load the dataset from the following link:

https://drive.google.com/file/d/1CiBU97OI-dB62XIVstEwoV4Kf1PK2Q8j

1) Implement a discriminator which gets two images as the input and predicts if the persons match or not. You need to prepare dataset by combination of images. Try to minimize the overfitting by adjusting the number of samples and parameters of the network. Plot the training and validation accuracy, as well as some examples of the network prediction.

2) Implement a Facenet to cluster this dataset of different people. You can use a convolutional neural network with a structure similar to VGG with the triplet loss.

```
!pip install -q tensorflow_datasets
!pip install -q --no-deps tensorflow-addons~=0.7

import tensorflow_addons as tfa

triplet_loss=tfa.losses.TripletSemiHardLoss()
def network_loss(label,output):
  loss=triplet_loss(label,output)
  return loss
```

After clustering using triplet loss, you can use K-means (unsupervised available in sklearn library) or a fully connected neural network to classify the output of the network.

https://scikit-learn.org/stable/modules/generated/sklearn.cluster.KMeans.html