Color Model Documentation

Introduction:

The model is built for predicting the color of the clothes in images. The initial datasets are from the DeepFashion dataset. At current stage, the model could only be used to predict one result like Oatmeal-indigo, Wine-cream and Orange-navy for one image that contains a person.

Dependencies:

- Install conda(anaconda/miniconda)
- Download the environment.yml. Run `conda activate Yikun` command line
- Optional: install all listed package through conda:
  - opencv
  - pytorch
  - tqdm
  - torchvision
  - random

Usage instruction

Dataset preprocessing

After preprocessing the datasets from DeepFashion, five data txt file will be generated: traindataset.txt, trainlabelset.txt, testdataset.txt, testlabelset.txt, and allcolor.txt. The usages of first four files are straightforward as their names shown. The allcolor.txt is a file keep track of all color labeled in the dataset. The order of colors in allcolot.txt must not be change once the txt files of datasets have been generated. In other words, every time the datasets are shuffled or updated, the allcolor.txt must be updated as a consequence. File datapipeline_update.py could be used to update/shuffle the datasets files and allcolor.txt. The preprocessing could take about 10 minutes.

- Load file: datapipeline_update.py
- Run file

  ```
  python datapipeline_update.py
  ```

Initially Train the model

38494 images are used to train the model and 14218 images are made of the test dataset. There is no overlap between these two datasets. A progress bar of training process should be presented after running. The accuracy of prediction on training set and test set will be presented after each epoch. The average training time is 45 minutes per epoch with a 2 GB GPU.

- Load files

  traindataset.txt, trainlabelset.txt, testdataset.txt, testlabelset.txt, and capstone_test.py
- Run file

  ```
  python capstone_test.py
  ```

The model trained in a certain epoch indicated by the variable `intEpoch` could be saved by uncomment the last lines in the capstone_test.py. The saved model file is called test.pth.

Make a Prediction

The saved model is used to predict without train the model again. An interpretable prediction based on a trained model will be given after running. Once the model is loaded in 2-5 minutes, the prediction of one image will only took 1-2 seconds.

- Load files
  allcolor.txt, test.pth, and img_test.py
- Change image path
  Find `path` variable in img_test.py, change it to the path of desired image
- Change model path:
  Find `torch.load('./test.pth')` change with the name of new model file or always save a model under name test.pth.
- Run file
  `Python img_test.py`

Connect to UI

To request a prediction with an image from the model remotely or connect to Kratos UI could be done by the model_connection.py.