DLCV Project Group 9 : Active Learning for Deep Object Detection

1. Requirements:

1. sys
2. re
3. os
4. pand
5. tensorflow
6. colorsys
7. PIL
8. torch
9. torchmetrics.detection.map
10. shutil
11. pprint
12. numpy

2. Folder structure

1. coco_dataset
   A. images folder - have coco dataset images
   B. image_annotations.csv - have annotation for all the images in the images folder. Csv file can be downloaded from here https://drive.google.com/file/d/1RkCMN08epszpEVoxkPGhCgSrdMTOjLtE/view?usp=sharing
2. yolocode
   A. model_data - This folder have three file coco_classes.txt have names of all classes in coco dataset, yolo_anchors.txt have anchor for yolo model, yolo_weights.h5 are weights for pretrained model.
   B. yolo3 - Contains model.py file have code for model architecture and utils.py file have utils function for yolo model.

3. How to run code

1. Active learning code is in yolo_active_learning.ipynb notebook.
2. To select dataset size to consider in make_annotation_txtfile function change value of nrows in read_csv function.
   make_annotation_txtfile function split dataset into testing and unlabel pool. It create txt file as image_name followed by annotation.
3. In section 6.1 make_annotation_txtfile is called followed by select_train_data function this function select N data from unlabel pool to train set. N is given as parameter.
4. In section 6.2 train function outside loop will train model on N data selected from section 6.1.
5. In loop 'n' parameter of annotated_images specify to select next most informative sample for next training.