Indian Institute of Technology, Mandi
August - November 2021

CS676 - Advance topics in Deep Learning

Assignment 1

Course Instructor : Aditya Nigam

10 Sep 2021

Instructions

- Plagiarism is strictly prohibited. In case of violation, a zero will be awarded for this assignment as a warning and a quick F grade if repeated later.
- Submit a README.MD file for which provides the instructions for running your codes in detail including the details of how to create the virtualenv and what are the packages required to be installed. Also provide the version of each package even of python.
- The deadline for submission is **Wednesday, 30th Sep, 2019, 2359 HRS**. No late submissions will be entertained.
- Utilize the free google drive storage of our college id for sharing the trained weights.
- The link for the dataset is: `https://tinyurl.com/59ypchdf`
- For any silly or small query Contact Daksh Thapar. Dont assume anything. Any doubt even so small can be asked. Phone number: 9592563214

1 Task 1: Segmentation task

The data for segmentation task is provided in the folder named 'cropping_task'. There are two folders 'train' and 'test'. In the train data we have two folders: 'annotations' and 'images'. Inside 'images', we have many subfolder and in each subfolders we have many images. Similarly inside 'annotations', we have same subfolders as in 'images', and inside these we have the corresponding bbox coordinates in the text files. In each text file, the first value is x coordinate of center; the second value is y coordinate of center; the third is height of the box; fourth is width of the box. We have given you the full train data but only a small representation of test data.

Your task is to create a python/shell script, which takes the test data directory as input, and reads all the images from all the subfolders and provides their corresponding bbox coordinates in corresponding subfolders as in train dataset.

2 Task 2: Matching task

The data for matching task is provided in the folder named 'matching_task'. There are two folders 'train' and 'test'. In train folder, there is one folder corresponding to each class. And inside each folder there are all the images belonging to that class.

Your task is to create a distance metric system, which will provide very small distance to images belonging to same class and high distance to images belonging to different classes.

You need to submit a python/shell script which takes input the path of 2 images and return the distance score.

3 Task 3: Combined task

The data for combined task is provided in the folder named 'cropping_task'. There are two folders 'train' and 'test'. In train folder, there is one folder corresponding to each class. And inside each folder there are all the images belonging to that class.

Your task is to create a distance metric system, which will provide very small distance to images belonging to same class and high distance to images belonging to different classes.

You need to submit a python/shell script which takes input the path of 2 images, crops them internally and return the distance score.