Customize Dataset Training – Faster RCNN TensorFlow Implementation

Clone the Faster RCNN repository from: https://github.com/smallcorgi/Faster-RCNN_TF. Then, install it as per instructions provided in **README.md**

Dataset Preparation
Create 4 folders in Faster-RCNN_TF/data/classname/

JPEGImages	.jpg files for your datasets.
Annotations	.xml files for the bounding boxes containing intended object. <annotation> <folder>colorcard</folder> <filename>1.jpg</filename> <size> <width>2448</width> <height>3264</height> <depth>3</depth> </size> <object> <name>amazoncolorcard</name> <bndbox> <xmin>699</xmin> <ymin>614</ymin> <xmax>1707</xmax> <ymax>2369</ymax> </bndbox> </object> </annotation> https://github.com/Ahmer-444/FasterRCNN/blob/master/create_annotations.py https://github.com/Ahmer-444/FasterRCNN/blob/master/create_annotation_helper_function.m
ImageSets	Contains “train.txt” & “test.txt” contains image names without extensions.
output	Contains BBOX output

Download VGG-imagenet Pretrained Model
Once you have populate all your folders except output. First, download the pretrained model as most of us will use transfer learning for better results.
https://www.dropbox.com/s/po2kzdhdgl4ix55/VGG_imagenet.npy?dl=0#

Configure Your Custom Dataset
cd Faster-RCNN_TF/lib/datasets/

Try to follow this configuration file to configure your dataset (colorcard.py).
https://github.com/Ahmer-444/FasterRCNN/blob/master/lib_datasets_colorcard.py

1. Rename the file to your “classname” for convenience.
2. Change the classes as per your requirement.
   self._classes = ('__background__', 'amazoncolorcard');
3. Rename every “colorcard” text with your classname.

Change configuration in (factory.py)
https://github.com/Ahmer-444/FasterRCNN/blob/master/lib_datasets_factory.py

Replace these lines a per your requirements based on dataset.

```
# ColorCard dataset
colorcard_devkit_path = '/home/ahmer/ColorCardTraining/Faster-RCNN_TF/data'
for split in ['train', 'test']:
    name = '{}_{}'.format('colorcard', split)
    print('Registered Dataset: ' + name)
    __sets[name] = (lambda split=split: colorcard(split, colorcard_devkit_path))
```

Configure Your Network
cd Faster-RCNN_TF/lib/networks/

Change n_classes variable in VGGnet_test.py and VGGnet_train.py as per your desired number of classes.

Configure Your Output Directory
cd Faster-RCNN_TF/experiments/cfgs

Make a copy of faster_rcnn_end2end.yml as classname.yml(colorcard.yml).
Replace EXP_DIR with your classname output directory, where trained model will be stored. (Faster-RCNN_TF/output/).

Start Training

Create train_classname.sh file in root directory and paste:

```
python ./tools/train_net.py --device "cpu" --iters 10000 --imdb "colorcard_train" --network "VGGnet_train" --cfg '/home/ahmer/ColorCardTraining/Faster-RCNN_TF/experiments/cfgs/colorcard.yml' --weights "/home/ahmer/ColorCardTraining/Faster-RCNN_TF/data/pretrain_model/VGG_imagenet.npy"
```

Execute train_classname.sh to start training.

Testing

Change input, output and model paths as per your case and place it in Faster-RCNN_TF/tools
https://github.com/Ahmer-444/FasterRCNN/blob/master/test_cfgs/cc_config.py

copy https://github.com/Ahmer-444/FasterRCNN/blob/master/test_cfgs/test_cc.py to Faster-RCNN_TF/tools.

Create test_classname.sh file in root directory and paste

```
python ./tools/test_cc.py
```

Execute and enjoy! :)