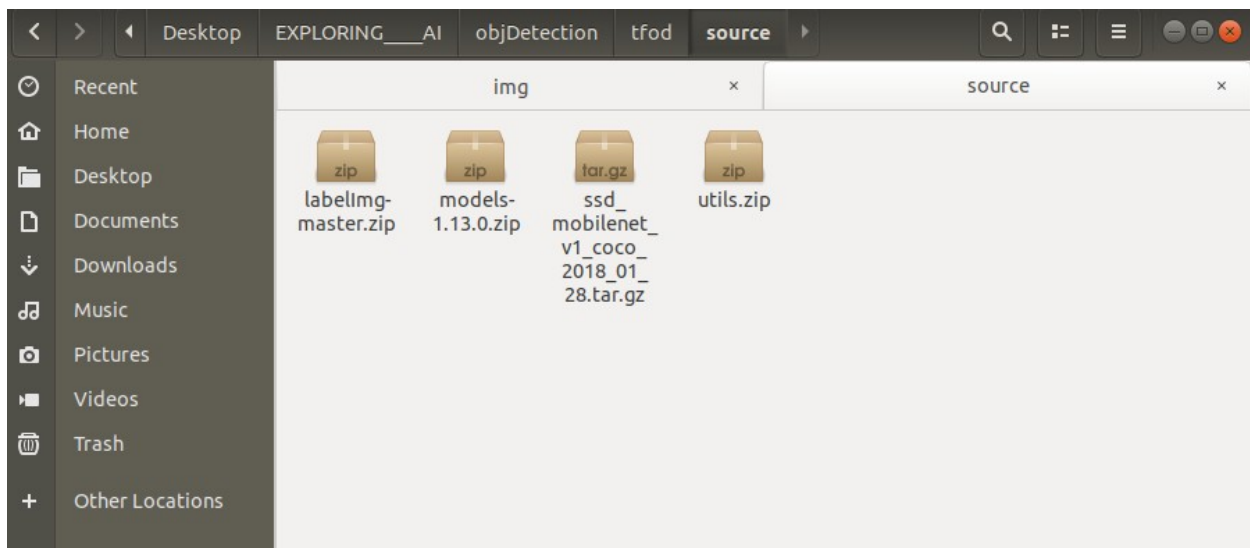# TFOD Configuration & steps for:

● Object detection

## STEP-1 Download the following content-

1. [Download](#) v1.13.0 model.

2. [Download](#) the ssd_mobilenet_v1_coco model from the model zoo **or** any other model of your choice

3. [Download](#) Dataset & utils.

4. [Download](#) labelImg tool for labeling images.

before extraction, you should have the following compressed files -

STEP-2 Extract all the above zip files into a tfod folder and remove the compressed files-

Now you should have the following folders -
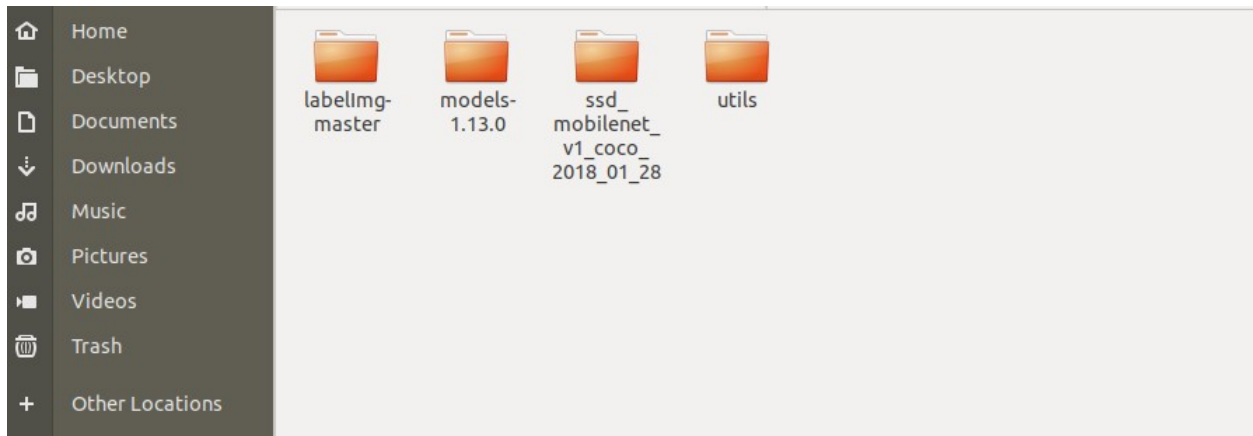
STEP-3 - In case of using Anaconda

● Creating virtual env using conda

Commands

for specific python version

conda create -n your_env_name python=3.7

for latest python version
conda activate your_env_name

● Creating virtual env using Linux
  - ○ Create Virtual Env
  - ○ Put all the downloaded folders in the virtual env
  - ○ Extract all the folders
  - ○ Activate the virtual env
  - ○

STEP-4 Install the following packages in your new environment-

for GPU

pip install pillow lxml Cython contextlib2 jupyter matplotlib pandas opencv-python tensorflow-gpu==1.15.0

for CPU only

pip install pillow lxml Cython contextlib2 jupyter matplotlib pandas opencv-python tensorflow==1.15.0

STEP-5 Install protobuf using conda package manager-

Using Conda:--- conda install -c anaconda protobuf

Using Linux - pip install labelImg
Python3 -m pip install --upgrade pip
Python3 labelImg.py

STEP-6 For protobuff to .py conversion download from a tool from here-

For windows -> download source for other versions and OS - click here

Open command prompt and cd to research folder.

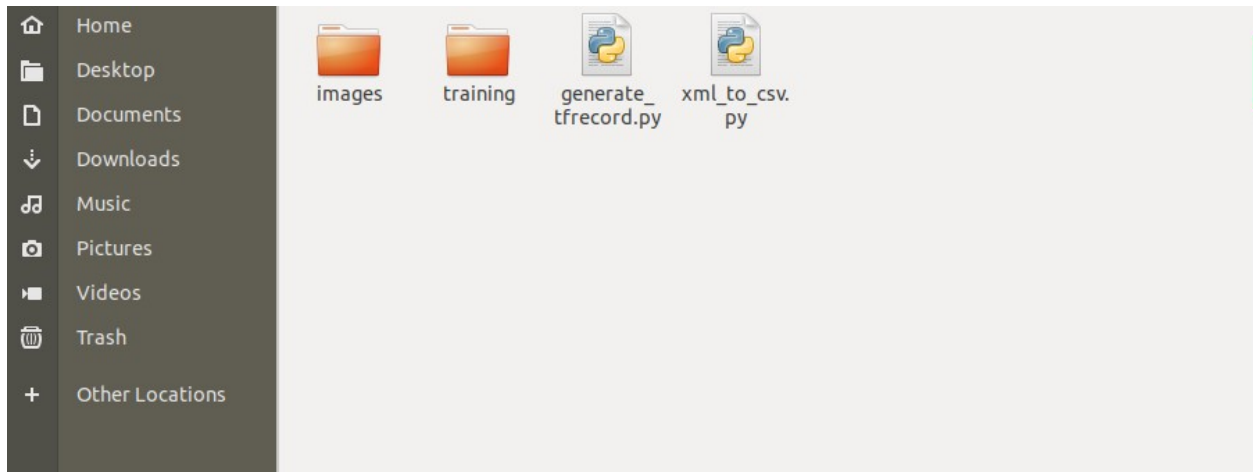Now in the research folder run the following command-

For Linux or Mac

protoc object_detection/protos/*.proto --python_out=.

For Windows

protoc object_detection/protos/*.proto --python_out=.

STEP-7 Paste all content present in utils into research folder-

Following are the files and folder present in the utils folder-

---

STEP-8 Paste ssd_mobilenet_v1_coco or any other model downloaded from model zoo into research folder-

Now cd to the research folder and run the following python file-

python xml_to_csv.py

STEP-9 Run the following to generate train and test records-

from the research folder-

python generate_tfrecord.py --csv_input=images/train_labels.csv --image_dir=images/train --output_path=train.record

python generate_tfrecord.py --csv_input=images/test_labels.csv --image_dir=images/test --output_path=test.record

---

STEP-10 Copy from *research/object_detection/samples/config/ YOURMODEL.config* file into *research/training-*

Note

The following config file shown here is with respect to **ssd_mobilenet_v1_coco**. So if you have downloaded it for any other model apart from SSD you'll see config file with YOUR_MODEL_NAME as shown below-

model {
YOUR_MODEL_NAME {
 num_classes: 6
 box_coder {
  faster_rcnn_box_coder {

Hence always verify YOUR_MODEL_NAME before using the config file.

STEP-11 Update *num_classes, fine_tune_checkpoint* ,and *num_steps* plus update *input_path* and *label_map_path* for both *train_input_reader* and *eval_input_reader*-
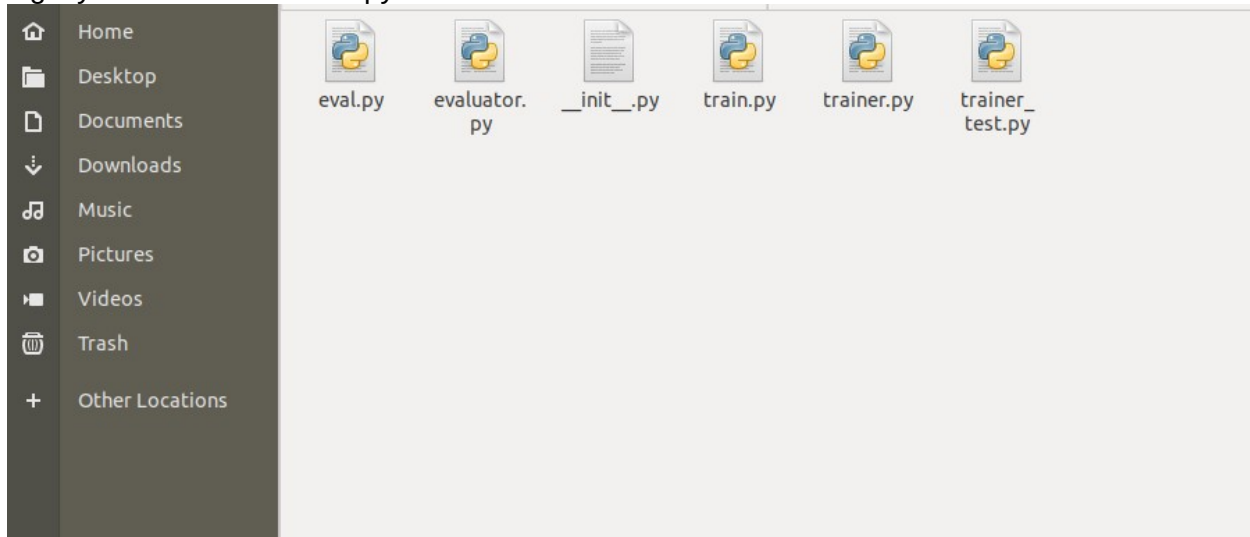
Info

Changes to be made in the config file are highlighted in yellow color. You must update the value of those keys in the config file.

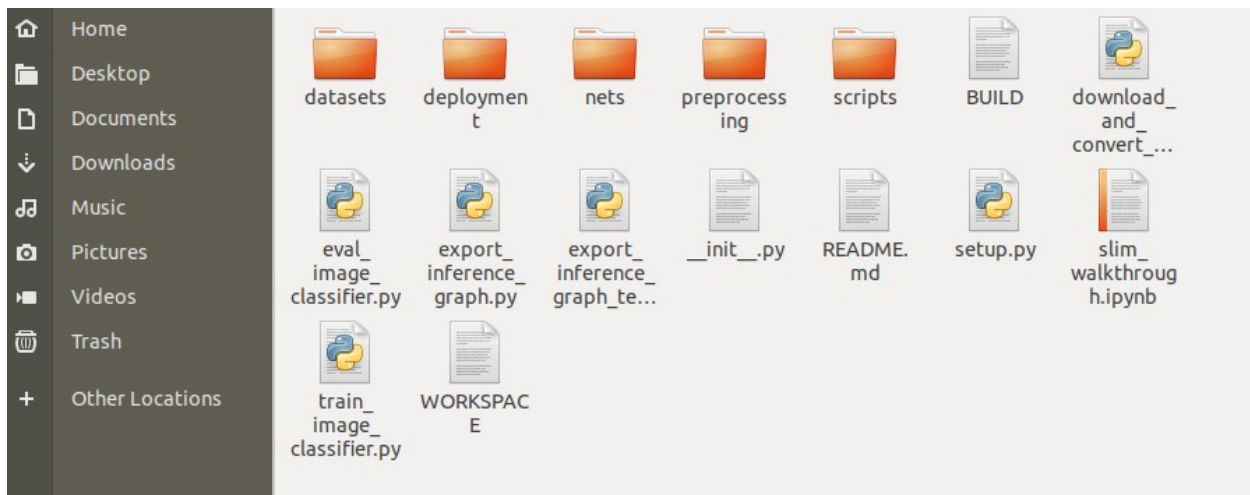Click here to see the full config file

---

STEP-12 From *research/object_detection/legacy/* copy *train.py* to research folder

legacy folder contains train.py as shown below -

STEP-13 Copy *deployment* and *nets* folder from *research/ slim* into the *research* folder-

slim folder contains the following folders -

STEP-14 NOW Run the following command from the *research* folder. This will start the training in your *local system-*

Note

copy the command and replace **YOUR_MODEL.config** with your own model's name for example **ssd_mobilenet_v1_coco.config** and then run it in cmd prompt or terminal. And *make sure you are in research folder*.

python train.py --logtostderr --train_dir=training/
--pipeline_config_path=training/YOUR_MODEL.config

Warning

Always run all the commands in the research folder.