**Training**

1. **Setting up the environment**

Create a folder tensorflow\_model in your C drive

Paste the models-master folder from this link: https://github.com/tensorflow/models

Rename it to models

Go to models->research->object\_detection folder

Paste all contents from here: https://github.com/EdjeElectronics/TensorFlow-Object-Detection-API-Tutorial-Train-Multiple-Objects-Windows-10 into this folder

You may overwrite readme

Paste setup.py from ./object\_detection/packages/tf2 to research folder

Open Anaconda prompt in admin mode and navigate to C drive

C:> conda create -n tensorflow\_model pip python=3.7

**NOTE: The repository says 3.5 but make sure you download 3.7**

activate tensorflow\_model

(tensorflow\_model) C:> python -m pip install --upgrade pip

**(tensorflow\_model) from hereon**

conda install -c anaconda protobuf

pip install pillow

pip install lxml

pip install Cython

pip install contextlib2

pip install jupyter

pip install matplotlib

pip install pandas

pip install opencv-python

set PYTHONPATH=C:\tensorflow\_model\models;C:\tensorflow\_model\models\research;C:\tensorflow\_model\models\research\slim

Navigate to research folder

cd C:\tensorflow\_model\models\research

C:\tensorflow\_model\models\research> protoc --python\_out=. .\object\_detection\protos\anchor\_generator.proto .\object\_detection\protos\argmax\_matcher.proto .\object\_detection\protos\bipartite\_matcher.proto .\object\_detection\protos\box\_coder.proto .\object\_detection\protos\box\_predictor.proto .\object\_detection\protos\eval.proto .\object\_detection\protos\faster\_rcnn.proto .\object\_detection\protos\faster\_rcnn\_box\_coder.proto .\object\_detection\protos\grid\_anchor\_generator.proto .\object\_detection\protos\hyperparams.proto .\object\_detection\protos\image\_resizer.proto .\object\_detection\protos\input\_reader.proto .\object\_detection\protos\losses.proto .\object\_detection\protos\matcher.proto .\object\_detection\protos\mean\_stddev\_box\_coder.proto .\object\_detection\protos\model.proto .\object\_detection\protos\optimizer.proto .\object\_detection\protos\pipeline.proto .\object\_detection\protos\post\_processing.proto .\object\_detection\protos\preprocessor.proto .\object\_detection\protos\region\_similarity\_calculator.proto .\object\_detection\protos\square\_box\_coder.proto .\object\_detection\protos\ssd.proto .\object\_detection\protos\ssd\_anchor\_generator.proto .\object\_detection\protos\string\_int\_label\_map.proto .\object\_detection\protos\train.proto .\object\_detection\protos\keypoint\_box\_coder.proto .\object\_detection\protos\multiscale\_anchor\_generator.proto .\object\_detection\protos\graph\_rewriter.proto .\object\_detection\protos\calibration.proto .\object\_detection\protos\flexible\_grid\_anchor\_generator.proto

This generates a python file for every corresponding proto file present

python setup.py build

python setup.py install

cd object\_detection

python xml\_to\_csv.py

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

1. **Starting the training process**

Go to ./object\_detection/samples/config and copy the file and paste it in the ./object\_detection/training folder

Make the changes in the config file as mentioned in the repository

Paste the: file in the object\_detection folder

Open a new anaconda prompt in admin mode

Go to C drive

Type commands:

Activate tensorflow\_model

set PYTHONPATH=C:\tensorflow\_model\models;C:\tensorflow\_model\models\research;C:\tensorflow\_model\models\research\slim

cd C:\tensorflow\_model\models\research\object\_detection

python train.py --logtostderr -train\_dir=training/ --pipeline\_config\_path=training/ssd\_mobilenet\_v2\_quantized\_300x300\_coco.config

**NOTES**

1. For any installation, say yes i.e. y
2. If train.py doesn’t work, uses model\_main.py

>python model\_main.py --logtostderr -train\_dir=training/ --pipeline\_config\_path=training/ssd\_mobilenet\_v2\_quantized\_300x300\_coco.config

1. The repository says 3.5 but make sure you download 3.7 when you create the virtual environment
2. Before you start the training, do a pip install tensorflow~=1.5
3. For any kind of errors like ModuleNotFoundError: No module named 'xyz' remember that this means the package is not installed. All you have to do is “pip install **xyz**” where xyz is the specific package. If that doesn’t work, google how to install the package
4. For any kind of errors like ImportError: cannot import name 'fpn\_pb2' from 'object\_detection.protos' (C:\tensorflow\_model\models\research\object\_detection\protos\\_\_init\_\_.py)

This means a certain proto file say abc is not present

Type protoc --python\_out=. .\object\_detection\protos\**abc**.proto

From the research directory

**COMMON ERRORS AND FIXES**

1. **ImportError: cannot import name 'fpn\_pb2' from 'object\_detection.protos' (C:\tensorflow\_model\models\research\object\_detection\protos\\_\_init\_\_.py)**

Go to the research folder and type:

protoc --python\_out=. .\object\_detection\protos\fpn.proto

Then go back to the object\_detection folder and start the training

1. **ModuleNotFoundError: No module named 'yaml'**

python -m pip install pyyaml

1. **ModuleNotFoundError: No module named 'gin'**

pip install gin-config==0.1.1

1. **ModuleNotFoundError: No module named 'tensorflow\_addons'**

pip install tensorflow-addons~=0.12.0

1. **tensorflow.python.framework.errors\_impl.InvalidArgumentError: Unsuccessful TensorSliceReader constructor: Failed to get matching files on C:/tensorflow\_model/models/research/object\_detection/ ssd\_mobilenet\_v2\_quantized\_300x300\_coco\_2019\_01\_03/model.ckpt: Not found: FindFirstFile failed for: C:/tensorflow\_model/models/research/object\_detection/ ssd\_mobilenet\_v2\_quantized\_300x300\_coco\_2019\_01\_03 : The system cannot find the path specified.; No such process**

Refer to point 2 of notes section

1. **ImportError: cannot import name 'center\_net\_pb2' from 'object\_detection.protos' (C:\tensorflow\_model\models\research\object\_detection\protos\\_\_init\_\_.py)**

Go to the research folder and type:

protoc --python\_out=. .\object\_detection\protos\input\_reader.proto

protoc --python\_out=. .\object\_detection\protos\center\_net.proto