

Faster RCNN Inception resnet 640 x 640

In [1]:

```
import os
from xml.etree import ElementTree
from bs4 import BeautifulSoup
import seaborn as sns
import collections
import pandas as pd
import xml.etree.ElementTree as ET
import cv2
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
import shutil
from imgaug.augmentables.bbs import BoundingBox, BoundingBoxesOnImage
from imgaug import augmenters as iaa
import imgaug as ia
import imageio
import re
import numpy as np
import time
```

In [2]:

```
from google.colab import drive
drive.mount('/content/drive')
```

Mounted at /content/drive

In [3]:

```
!nvidia-smi
```

```
Sat Dec 12 13:49:52 2020
+-----+
| NVIDIA-SMI 455.45.01      Driver Version: 418.67      CUDA Version: 10.1      |
+-----+-----+-----+
| GPU  Name      Persistence-M| Bus-Id      Disp.A  | Volatile Uncorr. ECC  | | | | |
| Fan  Temp  Perf  Pwr:Usage/Cap| Memory-Usage | GPU-Util  Compute M.  |
| |          |          |             |           |          |          MIG M. |
+=====+=====+=====+=====+=====+=====+=====+=====+
|  0  Tesla T4            Off  | 00000000:00:04.0 Off  |                  0 | | | |
| N/A   59C     P8    10W /  70W |        0MiB / 15079MiB |      0%     Default  |
|          |          |             |           |          |          ERR!  |
+-----+-----+-----+-----+-----+-----+-----+-----+
+-----+
| Processes:
| GPU  GI  CI      PID  Type  Process name          GPU Memory  |
|       ID  ID
| ======+=====+=====+=====+=====+=====+=====+=====+
| No running processes found
+-----+
```

In []:

```
%cd /content
!unzip /content/drive/MyDrive/data.zip
```

Road Damage Type :

Table 1: Road Damage Types and Definitions considered in Maeda et al. (2018)

Damage Type	Detail	Class Name
	Longitudinal	Wheel-marked part

Crack	Linear Crack	Construction joint part	D01
		Equal interval	D10
		Construction joint part	D11
Other Damage	Alligator Crack	Partial pavement, overall pavement	D20
			Pothole
			D40
		Cross walk blur	D43
		White line blur	D44

In [5]:

```
file_list = [filename for filename in os.listdir('/content/content/data/Images/train_images')]
print('Total train images in train_images folder : ',len(file_list))

file_list = [filename for filename in os.listdir('/content/content/data/Images/test_images')]
print('Total train images in test_images folder : ',len(file_list))

file_list = [filename for filename in os.listdir('/content/content/data/Images/augmented_image')]
print('Total train images in augmented_images folder : ',len(file_list))
```

Total train images in train_images folder : 11654
Total train images in test_images folder : 2914
Total train images in augmented_images folder : 11654

In [6]:

```
augmented_train_images_df = pd.read_csv('/content/content/data/label_csv/aug_train_label.csv')
augmented_train_images_df.head()
```

Out[6]:

	filename	width	height	label	xmin	ymin	xmax	ymax
0	aug_India_002925.jpg	640	640	D00	2.063132	302.10380	195.48555	583.27390
1	aug_India_002925.jpg	640	640	D00	516.283750	411.55258	610.63610	563.45996
2	aug_India_002925.jpg	640	640	D40	591.765700	455.89820	640.00000	523.83190
3	aug_Japan_002084.jpg	640	640	D20	2.200012	441.60000	188.86667	600.53330
4	aug_Japan_002084.jpg	640	640	D10	169.666660	390.40002	224.06668	406.40000

In [7]:

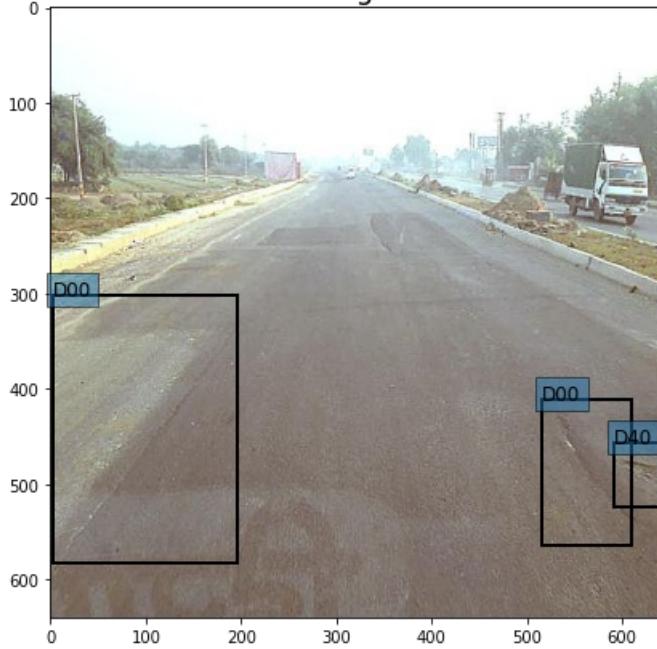
```
#grouped_original = test_label_df.groupby('filename')
grouped_resized = augmented_train_images_df.groupby('filename')

for filename in augmented_train_images_df ['filename'].unique()[0:20]:
    fig, cell = plt.subplots(1, 1, figsize=(7,7))

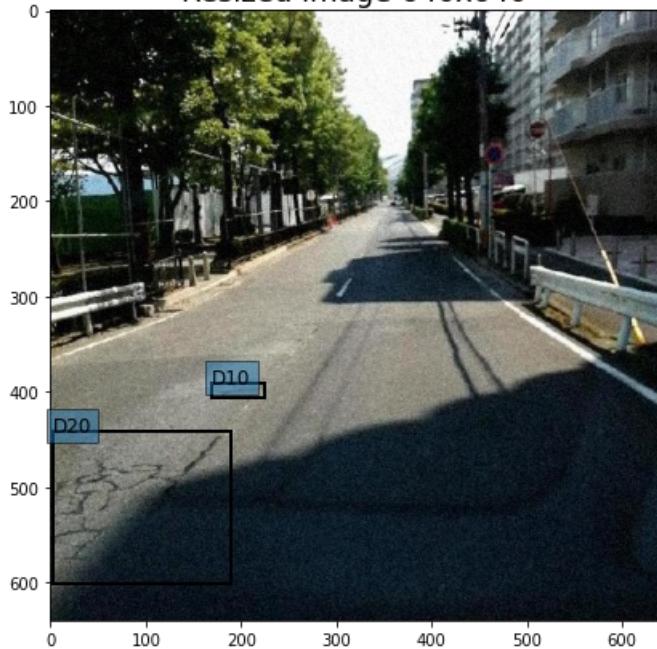
    group_r_df = grouped_resized.get_group(filename)
    group_r_df = group_r_df.reset_index()
    group_r_df = group_r_df.drop(['index'], axis=1)
    bb_r_array = group_r_df.drop(['filename', 'width', 'height'], axis=1).values
    resized_img = imageio.imread('/content/content/data/Images/augmented_image/'+filename)
    img_array1 = np.asarray(resized_img)
    cell.imshow(img_array1)

    #bbs_r = BoundingBoxesOnImage.from_xyxy_array(bb_r_array, shape=resized_img.shape)
    #print(bb_r_array)
    for box in bb_r_array:
        xmin = box[1]
        ymin = box[2]
        xmax = box[3]
        ymax = box[4]
        # color = colors[int(box[0])]
        label = '{}'.format(box[0])
        cell.set_title('Resized image 640x640', fontsize = 18)
        cell.add_patch(plt.Rectangle((xmin, ymin), xmax-xmin, ymax-ymin, fill=False, linewidth=2))
        cell.text(xmin, ymin, label, size='large', color='black', bbox={'alpha':0.5})
```

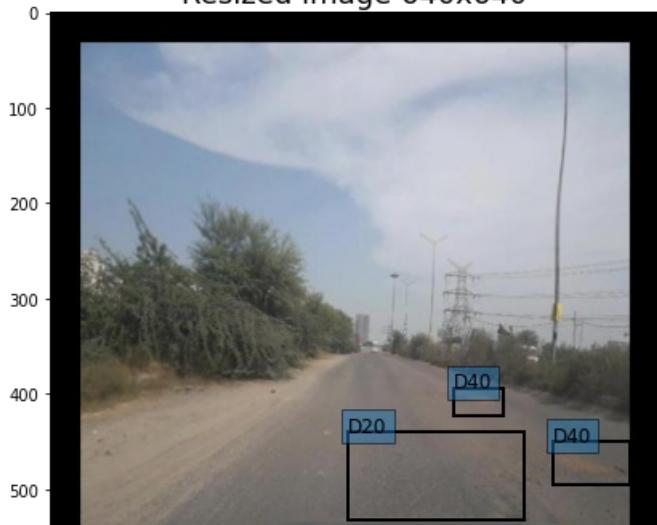
Resized image 640x640

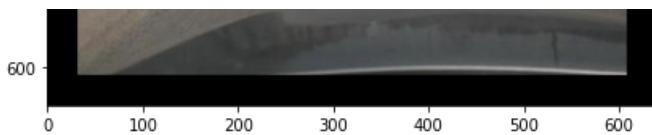


Resized image 640x640



Resized image 640x640

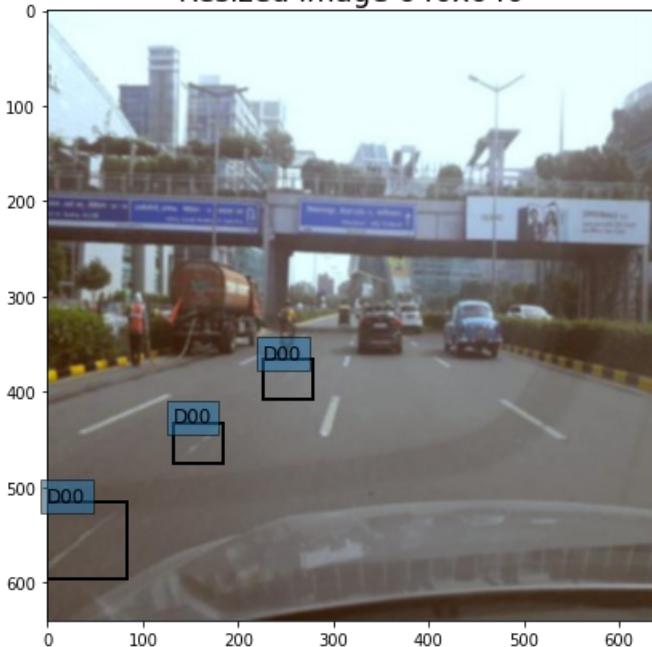




Resized image 640x640

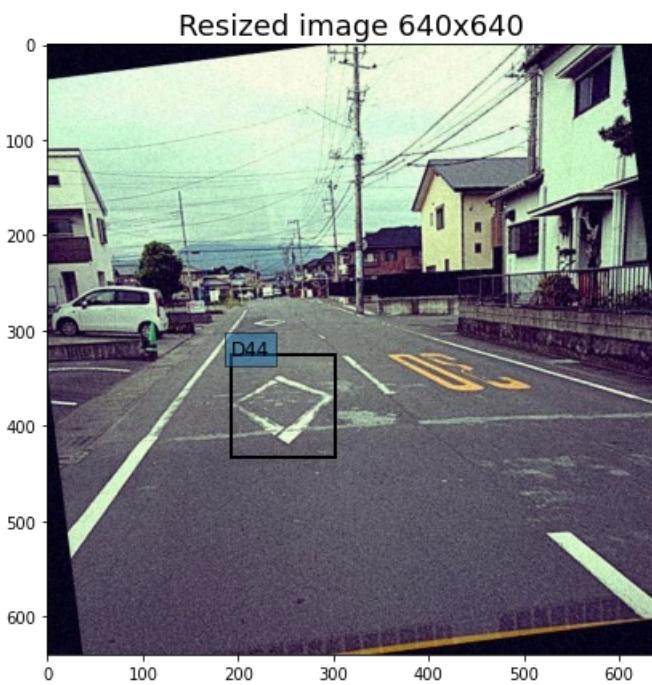
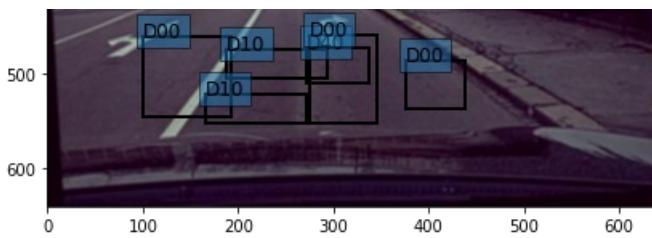


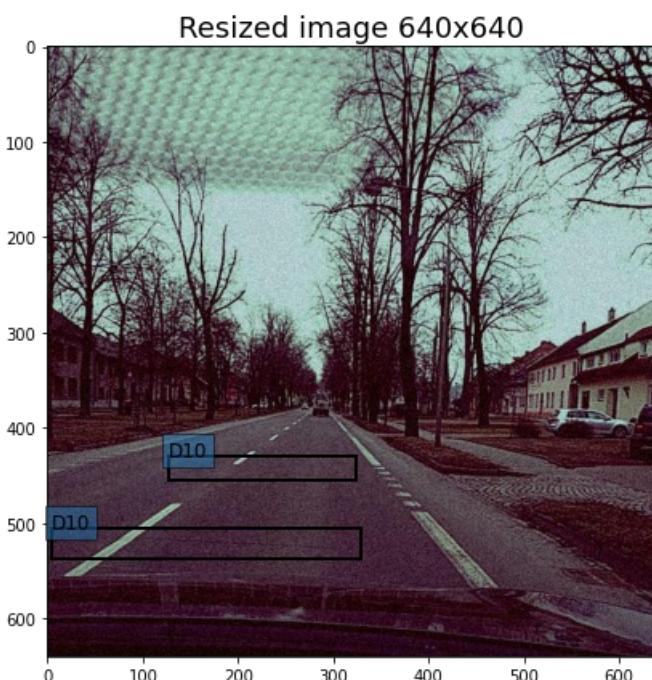
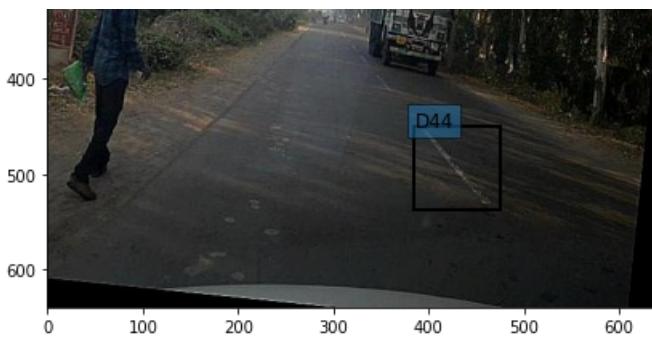
Resized image 640x640

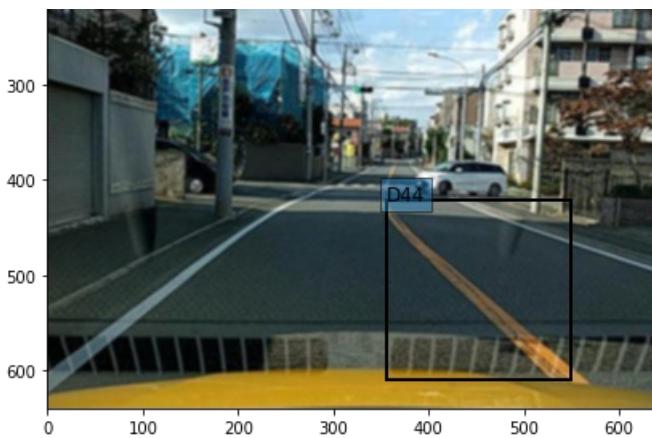


Resized image 640x640





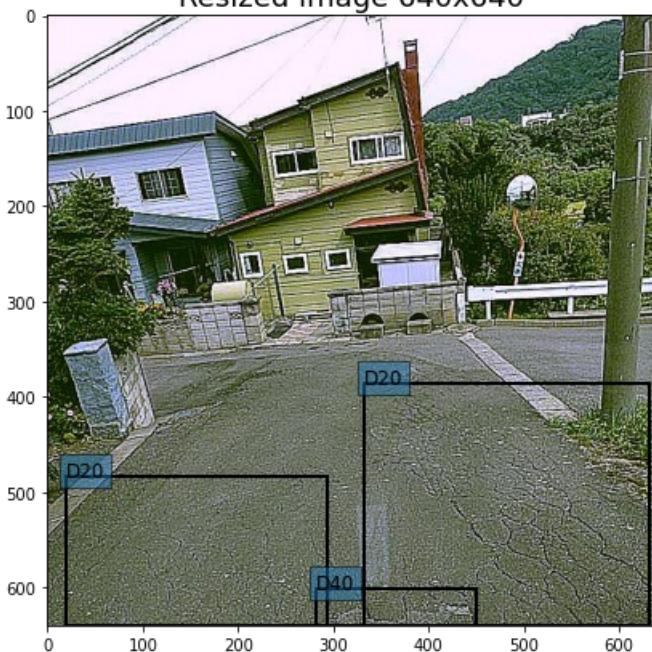




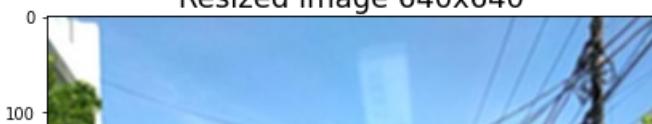
Resized image 640x640



Resized image 640x640

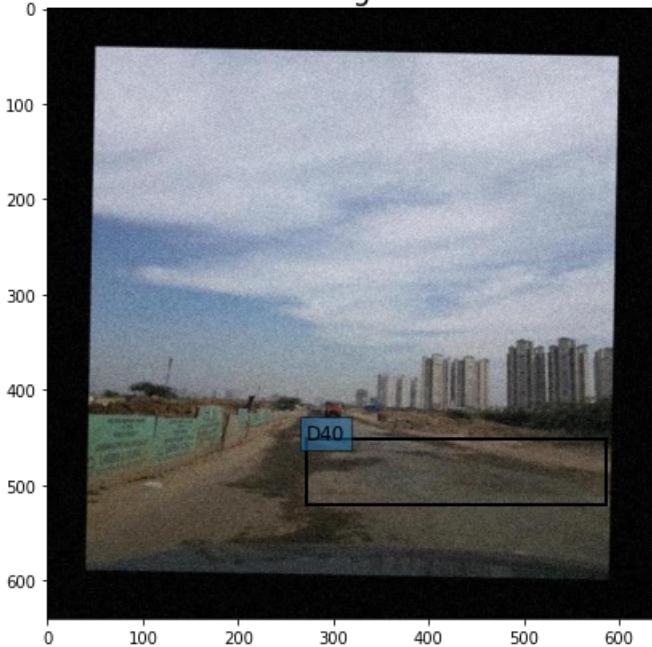


Resized image 640x640

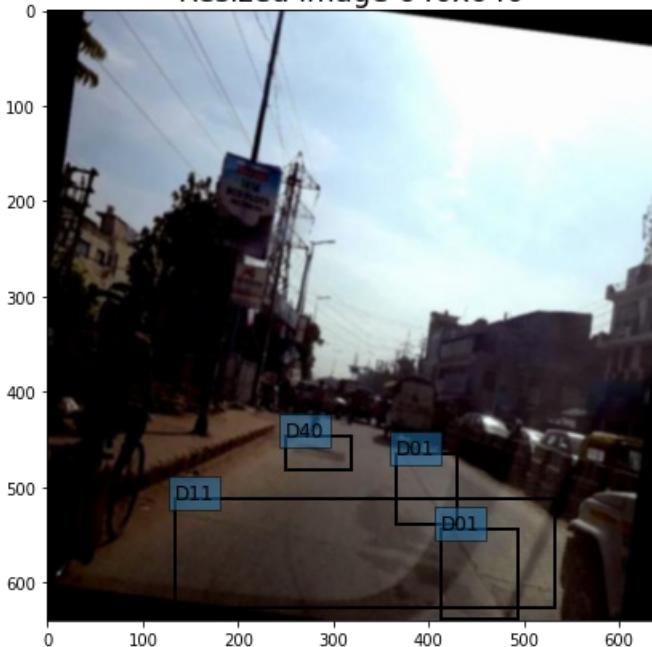




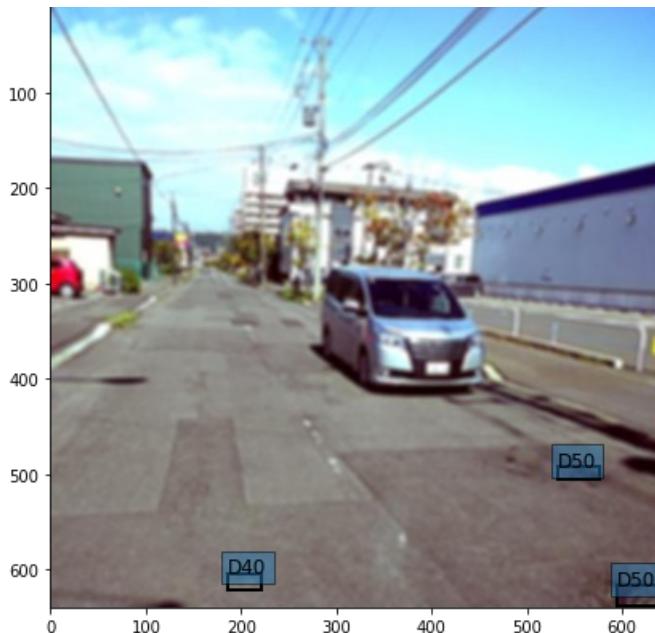
Resized image 640x640



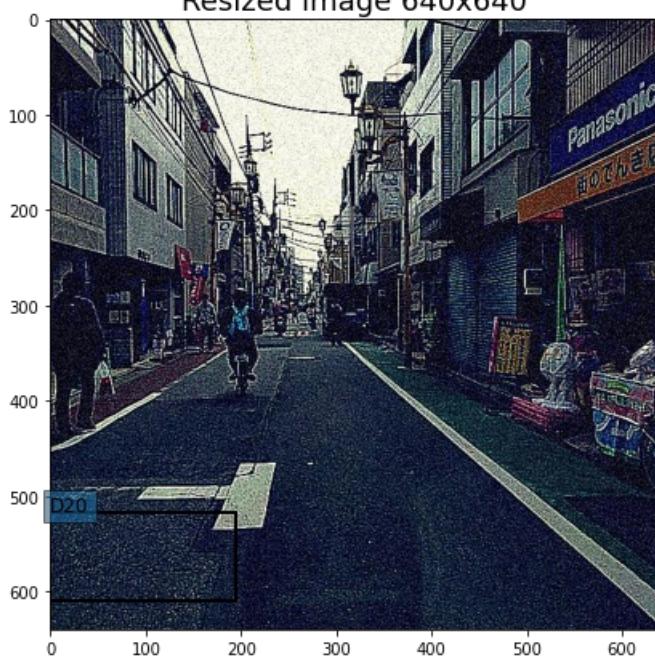
Resized image 640x640



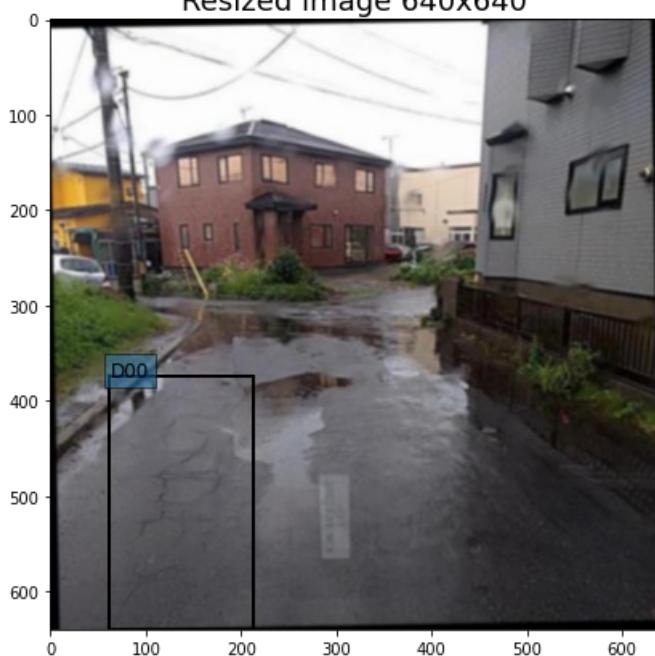
Resized image 640x640



Resized image 640x640



Resized image 640x640



In [8]:

```
org_aug_train_combine = pd.read_csv('/content/content/data/label_csv/orignal_plus_aug_combine.csv')
)
org_aug_train_combine.head()
```

Out[8]:

	filename	width	height	label	xmin	ymin	xmax	ymax
0	India_002925.jpg	640	640	D00	20.444447	303.111110	202.666666	568.0000
1	India_002925.jpg	640	640	D00	504.888900	406.222223	593.77780	549.3334
2	India_002925.jpg	640	640	D40	576.000000	448.00000	634.66670	512.0000
3	Japan_002084.jpg	640	640	D20	450.133330	441.60000	636.80000	600.5333
4	Japan_002084.jpg	640	640	D10	414.933320	390.40002	469.33334	406.4000

In [9]:

```
#copy all the augmented images into train images folder so we can have original resized 64x640 images and augmented images in one place
for fil in augmented_train_images_df.filename.values:
    shutil.copy( '/content/content/data/Images/augmented_image/'+ fil,
"/content/content/data/Images/train_images/")

file_list = [filename for filename in os.listdir('/content/content/data/Images/train_images')]
print('Total train images in train_images folder : ',len(file_list))
```

Total train images in train_images folder : 23304

In [10]:

```
!rm -rf /content/content/data/Images/augmented_image
```

TF Records :

In [11]:

```
!pip install tensorflow-object-detection-api

Collecting tensorflow-object-detection-api
  Downloading https://files.pythonhosted.org/packages/4e/11/7f6d3c5c4b603cc40b2813059779afb641bd5eb68045c62ca520k359/tensorflow_object_detection_api-0.1.1.tar.gz (577kB)
    |████████| 583kB 12.0MB/s
Requirement already satisfied: Pillow>=1.0 in /usr/local/lib/python3.6/dist-packages (from tensorflow-object-detection-api) (7.0.0)
Requirement already satisfied: Matplotlib>=2.1 in /usr/local/lib/python3.6/dist-packages (from tensorflow-object-detection-api) (3.2.2)
Requirement already satisfied: Cython>=0.28.1 in /usr/local/lib/python3.6/dist-packages (from tensorflow-object-detection-api) (0.29.21)
Requirement already satisfied: Protobuf in /usr/local/lib/python3.6/dist-packages (from tensorflow-object-detection-api) (3.12.4)
Requirement already satisfied: lxml in /usr/local/lib/python3.6/dist-packages (from tensorflow-object-detection-api) (4.2.6)
Requirement already satisfied: jupyter in /usr/local/lib/python3.6/dist-packages (from tensorflow-object-detection-api) (1.0.0)
Requirement already satisfied: tensorflow in /usr/local/lib/python3.6/dist-packages (from tensorflow-object-detection-api) (2.3.0)
Requirement already satisfied: contextlib2 in /usr/local/lib/python3.6/dist-packages (from tensorflow-object-detection-api) (0.5.5)
Requirement already satisfied: wheel in /usr/local/lib/python3.6/dist-packages (from tensorflow-object-detection-api) (0.36.1)
Collecting twine
  Downloading https://files.pythonhosted.org/packages/ad/db/b2c65078b783c6694bdfa0911bbbe0e2be7fcbc98ff23a99b8be5
```

```
6b6/twine-3.2.0-py3-none-any.whl
Requirement already satisfied: python-dateutil>=2.1 in /usr/local/lib/python3.6/dist-packages
  (from Matplotlib>=2.1->tensorflow-object-detection-api) (2.8.1)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.6/dist-packages (from
Matplotlib>=2.1->tensorflow-object-detection-api) (0.10.0)
Requirement already satisfied: pyparsing!=2.0.4,!~=2.1.2,!~=2.1.6,>=2.0.1 in
/usr/local/lib/python3.6/dist-packages (from Matplotlib>=2.1->tensorflow-object-detection-api) (2.
4.7)
Requirement already satisfied: numpy>=1.11 in /usr/local/lib/python3.6/dist-packages (from
Matplotlib>=2.1->tensorflow-object-detection-api) (1.18.5)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.6/dist-packages (from
Matplotlib>=2.1->tensorflow-object-detection-api) (1.3.1)
Requirement already satisfied: setuptools in /usr/local/lib/python3.6/dist-packages (from
Protobuf->tensorflow-object-detection-api) (50.3.2)
Requirement already satisfied: six>=1.9 in /usr/local/lib/python3.6/dist-packages (from Protobuf->
tensorflow-object-detection-api) (1.15.0)
Requirement already satisfied: jupyter-console in /usr/local/lib/python3.6/dist-packages (from
jupyter->tensorflow-object-detection-api) (5.2.0)
Requirement already satisfied: ipykernel in /usr/local/lib/python3.6/dist-packages (from jupyter->
tensorflow-object-detection-api) (4.10.1)
Requirement already satisfied: notebook in /usr/local/lib/python3.6/dist-packages (from jupyter->t
ensorflow-object-detection-api) (5.3.1)
Requirement already satisfied: ipywidgets in /usr/local/lib/python3.6/dist-packages (from jupyter->
tensorflow-object-detection-api) (7.5.1)
Requirement already satisfied: nbconvert in /usr/local/lib/python3.6/dist-packages (from jupyter->
tensorflow-object-detection-api) (5.6.1)
Requirement already satisfied: qtconsole in /usr/local/lib/python3.6/dist-packages (from jupyter->
tensorflow-object-detection-api) (5.0.1)
Requirement already satisfied: opt-einsum>=2.3.2 in /usr/local/lib/python3.6/dist-packages (from
tensorflow->tensorflow-object-detection-api) (3.3.0)
Requirement already satisfied: absl-py>=0.7.0 in /usr/local/lib/python3.6/dist-packages (from
tensorflow->tensorflow-object-detection-api) (0.10.0)
Requirement already satisfied: h5py<2.11.0,>=2.10.0 in /usr/local/lib/python3.6/dist-packages
  (from tensorflow->tensorflow-object-detection-api) (2.10.0)
Requirement already satisfied: wrapt>=1.11.1 in /usr/local/lib/python3.6/dist-packages (from
tensorflow->tensorflow-object-detection-api) (1.12.1)
Requirement already satisfied: gast==0.3.3 in /usr/local/lib/python3.6/dist-packages (from
tensorflow->tensorflow-object-detection-api) (0.3.3)
Requirement already satisfied: google-pasta>=0.1.8 in /usr/local/lib/python3.6/dist-packages (from
tensorflow->tensorflow-object-detection-api) (0.2.0)
Requirement already satisfied: keras-preprocessing<1.2,>=1.1.1 in /usr/local/lib/python3.6/dist-pa
ckages (from tensorflow->tensorflow-object-detection-api) (1.1.2)
Requirement already satisfied: astunparse==1.6.3 in /usr/local/lib/python3.6/dist-packages (from
tensorflow->tensorflow-object-detection-api) (1.6.3)
Requirement already satisfied: termcolor>=1.1.0 in /usr/local/lib/python3.6/dist-packages (from
tensorflow->tensorflow-object-detection-api) (1.1.0)
Requirement already satisfied: grpcio>=1.8.6 in /usr/local/lib/python3.6/dist-packages (from
tensorflow->tensorflow-object-detection-api) (1.34.0)
Requirement already satisfied: tensorboard<3,>=2.3.0 in /usr/local/lib/python3.6/dist-packages
  (from tensorflow->tensorflow-object-detection-api) (2.3.0)
Requirement already satisfied: scipy==1.4.1 in /usr/local/lib/python3.6/dist-packages (from
tensorflow->tensorflow-object-detection-api) (1.4.1)
Requirement already satisfied: tensorflow-estimator<2.4.0,>=2.3.0 in
/usr/local/lib/python3.6/dist-packages (from tensorflow->tensorflow-object-detection-api) (2.3.0)
Requirement already satisfied: requests>=2.20 in /usr/local/lib/python3.6/dist-packages (from
twine->tensorflow-object-detection-api) (2.23.0)
Collecting requests_toolbelt!=0.9.0,>=0.8.0
    Downloading
    https://files.pythonhosted.org/packages/60/ef/7681134338fc097acef8d9b2f8abe0458e4d87559c689a8c306dc
ce5/requests_toolbelt-0.9.1-py2.py3-none-any.whl (54kB)
    |████████| 61kB 10.3MB/s
Collecting rfc3986>=1.4.0
    Downloading
    https://files.pythonhosted.org/packages/78/be/7b8b99fd74ff5684225f50dd0e865393d2265656ef3b4ba9eaaaf
2b8/rfc3986-1.4.0-py2.py3-none-any.whl
Collecting readme_renderer>=21.0
    Downloading
    https://files.pythonhosted.org/packages/54/18/0adfcac99c08a6d45947e5da4e1388a7bb9957502a2b4ad12176f
eaf/readme_renderer-28.0-py2.py3-none-any.whl
Collecting colorama>=0.4.3
    Downloading
    https://files.pythonhosted.org/packages/44/98/5b86278fbbf250d239ae0ecb724f8572af1c91f4a11edf4d36a2c
440/colorama-0.4.4-py2.py3-none-any.whl
Requirement already satisfied: tqdm>=4.14 in /usr/local/lib/python3.6/dist-packages (from twine->
tensorflow-object-detection-api) (4.41.1)
Collecting keyring>=15.1
    Downloading
```

```
https://files.pythonhosted.org/packages/53/14/1c952bcd21255f42f9ba0280d3abd8074dca2c27d136eb749b98af72/keyring-21.5.0-py3-none-any.whl
Collecting pkginfo>=1.4.2
    Downloading
https://files.pythonhosted.org/packages/4f/3c/535287349af1b117e082f8e77feca52fbe2fdf61ef1e6da6bcc2aa79/pkginfo-1.6.1-py2.py3-none-any.whl
Requirement already satisfied: importlib-metadata; python_version < "3.8" in /usr/local/lib/python3.6/dist-packages (from twine->tensorflow-object-detection-api) (3.1.1)
Requirement already satisfied: ipython in /usr/local/lib/python3.6/dist-packages (from jupyter-console->jupyter->tensorflow-object-detection-api) (5.5.0)
Requirement already satisfied: prompt-toolkit<2.0.0,>=1.0.0 in /usr/local/lib/python3.6/dist-packages (from jupyter-console->jupyter->tensorflow-object-detection-api) (1.0.18)
Requirement already satisfied: pygments in /usr/local/lib/python3.6/dist-packages (from jupyter-console->jupyter->tensorflow-object-detection-api) (2.6.1)
Requirement already satisfied: jupyter-client in /usr/local/lib/python3.6/dist-packages (from jupyter-console->jupyter->tensorflow-object-detection-api) (5.3.5)
Requirement already satisfied: traitlets>=4.1.0 in /usr/local/lib/python3.6/dist-packages (from ipykernel->jupyter->tensorflow-object-detection-api) (4.3.3)
Requirement already satisfied: tornado>=4.0 in /usr/local/lib/python3.6/dist-packages (from ipykernel->jupyter->tensorflow-object-detection-api) (5.1.1)
Requirement already satisfied: jinja2 in /usr/local/lib/python3.6/dist-packages (from notebook->jupyter->tensorflow-object-detection-api) (2.11.2)
Requirement already satisfied: nbformat in /usr/local/lib/python3.6/dist-packages (from notebook->jupyter->tensorflow-object-detection-api) (5.0.8)
Requirement already satisfied: jupyter-core>=4.4.0 in /usr/local/lib/python3.6/dist-packages (from notebook->jupyter->tensorflow-object-detection-api) (4.7.0)
Requirement already satisfied: Send2Trash in /usr/local/lib/python3.6/dist-packages (from notebook->jupyter->tensorflow-object-detection-api) (1.5.0)
Requirement already satisfied: terminado>=0.8.1 in /usr/local/lib/python3.6/dist-packages (from notebook->jupyter->tensorflow-object-detection-api) (0.9.1)
Requirement already satisfied: ipython-genutils in /usr/local/lib/python3.6/dist-packages (from notebook->jupyter->tensorflow-object-detection-api) (0.2.0)
Requirement already satisfied: widgetsnbextension~=3.5.0 in /usr/local/lib/python3.6/dist-packages (from ipywidgets->jupyter->tensorflow-object-detection-api) (3.5.1)
Requirement already satisfied: mistune<2,>=0.8.1 in /usr/local/lib/python3.6/dist-packages (from nbconvert->jupyter->tensorflow-object-detection-api) (0.8.4)
Requirement already satisfied: testpath in /usr/local/lib/python3.6/dist-packages (from nbconvert->jupyter->tensorflow-object-detection-api) (0.4.4)
Requirement already satisfied: bleach in /usr/local/lib/python3.6/dist-packages (from nbconvert->jupyter->tensorflow-object-detection-api) (3.2.1)
Requirement already satisfied: pandocfilters>=1.4.1 in /usr/local/lib/python3.6/dist-packages (from nbconvert->jupyter->tensorflow-object-detection-api) (1.4.3)
Requirement already satisfied: defusedxml in /usr/local/lib/python3.6/dist-packages (from nbconvert->jupyter->tensorflow-object-detection-api) (0.6.0)
Requirement already satisfied: entrypoints>=0.2.2 in /usr/local/lib/python3.6/dist-packages (from nbconvert->jupyter->tensorflow-object-detection-api) (0.3)
Requirement already satisfied: qtpy in /usr/local/lib/python3.6/dist-packages (from qtconsole->jupyter->tensorflow-object-detection-api) (1.9.0)
Requirement already satisfied: pyzmq>=17.1 in /usr/local/lib/python3.6/dist-packages (from qtconsole->jupyter->tensorflow-object-detection-api) (20.0.0)
Requirement already satisfied: google-auth<2,>=1.6.3 in /usr/local/lib/python3.6/dist-packages (from tensorboard<3,>=2.3.0->tensorflow->tensorflow-object-detection-api) (1.17.2)
Requirement already satisfied: markdown>=2.6.8 in /usr/local/lib/python3.6/dist-packages (from tensorboard<3,>=2.3.0->tensorflow->tensorflow-object-detection-api) (3.3.3)
Requirement already satisfied: google-auth-oauthlib<0.5,>=0.4.1 in /usr/local/lib/python3.6/dist-packages (from tensorboard<3,>=2.3.0->tensorflow->tensorflow-object-detection-api) (0.4.2)
Requirement already satisfied: tensorboard-plugin-wit>=1.6.0 in /usr/local/lib/python3.6/dist-packages (from tensorboard<3,>=2.3.0->tensorflow->tensorflow-object-detection-api) (1.7.0)
Requirement already satisfied: werkzeug>=0.11.15 in /usr/local/lib/python3.6/dist-packages (from tensorboard<3,>=2.3.0->tensorflow->tensorflow-object-detection-api) (1.0.1)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.6/dist-packages (from requests>=2.20->twine->tensorflow-object-detection-api) (2020.12.5)
Requirement already satisfied: urllib3!=1.25.0,!>=1.25.1,<1.26,>=1.21.1 in /usr/local/lib/python3.6/dist-packages (from requests>=2.20->twine->tensorflow-object-detection-api) (1.24.3)
Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.6/dist-packages (from requests>=2.20->twine->tensorflow-object-detection-api) (3.0.4)
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.6/dist-packages (from requests>=2.20->twine->tensorflow-object-detection-api) (2.10)
Requirement already satisfied: docutils>=0.13.1 in /usr/local/lib/python3.6/dist-packages (from readme-renderer>=21.0->twine->tensorflow-object-detection-api) (0.16)
Collecting jeepney>=0.4.2; sys_platform == "linux"
    Downloading
https://files.pythonhosted.org/packages/51/b0/a6ea72741aaac3f37fb96d195e4ee576a103c4c04e279bc6b446a0e1/jeepney-0.6.0-py3-none-any.whl (45kB)
|████████████████████████████████████████████████████████████████████████████████| 51kB 7.7MB/s
Collecting SecretStorage>=3.2: svs platform == "linux"
```

```
Collecting SecretStorage-3.3.0-py3-none-any.whl
  Downloading https://files.pythonhosted.org/packages/63/a2/a6d9099b14eb5dbbb04fb722d2b5322688f8f99b471bdf2097e33091/SecretStorage-3.3.0-py3-none-any.whl
Requirement already satisfied: zipp>=0.5 in /usr/local/lib/python3.6/dist-packages (from SecretStorage-3.3.0-py3-none-any.whl)
Requirement already satisfied: importlib-metadata; python_version < "3.8"-->twine->tensorflow-object-detection-api (3.4.0)
Requirement already satisfied: pickleshare in /usr/local/lib/python3.6/dist-packages (from ipython->jupyter-console->jupyter->tensorflow-object-detection-api) (0.7.5)
Requirement already satisfied: pexpect; sys_platform != "win32" in /usr/local/lib/python3.6/dist-packages (from ipython->jupyter-console->jupyter->tensorflow-object-detection-api) (4.8.0)
Requirement already satisfied: simplegeneric>0.8 in /usr/local/lib/python3.6/dist-packages (from ipython->jupyter-console->jupyter->tensorflow-object-detection-api) (0.8.1)
Requirement already satisfied: decorator in /usr/local/lib/python3.6/dist-packages (from ipython->jupyter-console->jupyter->tensorflow-object-detection-api) (4.4.2)
Requirement already satisfied: wcwidth in /usr/local/lib/python3.6/dist-packages (from prompt-toolkit<2.0.0,>=1.0.0->jupyter-console->jupyter->tensorflow-object-detection-api) (0.2.5)
Requirement already satisfied: MarkupSafe>=0.23 in /usr/local/lib/python3.6/dist-packages (from jinja2->notebook->jupyter->tensorflow-object-detection-api) (1.1.1)
Requirement already satisfied: jsonschema!=2.5.0,>=2.4 in /usr/local/lib/python3.6/dist-packages (from nbformat->notebook->jupyter->tensorflow-object-detection-api) (2.6.0)
Requirement already satisfied: ptyprocess; os_name != "nt" in /usr/local/lib/python3.6/dist-packages (from terminado>=0.8.1->notebook->jupyter->tensorflow-object-detection-api) (0.6.0)
Requirement already satisfied: packaging in /usr/local/lib/python3.6/dist-packages (from bleach->nbconvert->jupyter->tensorflow-object-detection-api) (20.7)
Requirement already satisfied: webencodings in /usr/local/lib/python3.6/dist-packages (from bleach->nbconvert->jupyter->tensorflow-object-detection-api) (0.5.1)
Requirement already satisfied: rsa<5,>=3.1.4; python_version >= "3" in /usr/local/lib/python3.6/dist-packages (from google-auth<2,>=1.6.3->tensorboard<3,>=2.3.0->tensorflow->tensorflow-object-detection-api) (4.6)
Requirement already satisfied: pyasn1-modules>=0.2.1 in /usr/local/lib/python3.6/dist-packages (from google-auth<2,>=1.6.3->tensorboard<3,>=2.3.0->tensorflow->tensorflow-object-detection-api) (0.2.8)
Requirement already satisfied: cachetools<5.0,>=2.0.0 in /usr/local/lib/python3.6/dist-packages (from google-auth<2,>=1.6.3->tensorboard<3,>=2.3.0->tensorflow->tensorflow-object-detection-api) (4.1.1)
Requirement already satisfied: requests-oauthlib>=0.7.0 in /usr/local/lib/python3.6/dist-packages (from google-auth-oauthlib<0.5,>=0.4.1->tensorboard<3,>=2.3.0->tensorflow->tensorflow-object-detection-api) (1.3.0)
Collecting cryptography>=2.0
  Downloading https://files.pythonhosted.org/packages/c9/de/7054df0620b5411ba45480f0261e1fb66a53f3db31b28e3aa52cc2d9/cryptography-3.3.1-cp36-abi3-manylinux2010_x86_64.whl (2.6MB)
    |██████████| 2.6MB 38.7MB/s
Requirement already satisfied: pyasn1>=0.1.3 in /usr/local/lib/python3.6/dist-packages (from cryptography-3.3.1-cp36-abi3-manylinux2010_x86_64.whl)
Requirement already satisfied: requests-oauthlib>=0.7.0->google-auth<2,>=1.6.3->tensorboard<3,>=2.3.0->tensorflow->tensorflow-object-detection-api (0.4.8)
Requirement already satisfied: oauthlib>=3.0.0 in /usr/local/lib/python3.6/dist-packages (from requests-oauthlib>=0.7.0->google-auth-oauthlib<0.5,>=0.4.1->tensorboard<3,>=2.3.0->tensorflow->tensorflow-object-detection-api) (3.1.0)
Requirement already satisfied: cffi>=1.12 in /usr/local/lib/python3.6/dist-packages (from cryptography>=2.0->SecretStorage>=3.2; sys_platform == "linux"-->keyring>=15.1->twine->tensorflow-object-detection-api) (1.14.4)
Requirement already satisfied: pycparser in /usr/local/lib/python3.6/dist-packages (from cffi>=1.12->cryptography>=2.0->SecretStorage>=3.2; sys_platform == "linux"-->keyring>=15.1->twine->tensorflow-object-detection-api) (2.20)
Building wheels for collected packages: tensorflow-object-detection-api
  Building wheel for tensorflow-object-detection-api (setup.py) ... done
  Created wheel for tensorflow-object-detection-api: filename=tensorflow_object_detection_api-0.1.1-cp36-none-any.whl size=844515
sha256=719de241f5b9761152fd13bdf4ac5a690e18bb3b617eebf5bed51df3e244d03e
  Stored in directory:
  /root/.cache/pip/wheels/4a/54/d0/cfcac11930c4b2025d40dede77059094070a67cc3e7bd3b285f
Successfully built tensorflow-object-detection-api
Installing collected packages: requests-toolbelt, rfc3986, readme-renderer, colorama, jeepney, cryptography, SecretStorage, keyring, pkginfo, twine, tensorflow-object-detection-api
Successfully installed SecretStorage-3.3.0 colorama-0.4.4 cryptography-3.3.1 jeepney-0.6.0 keyring-21.5.0 pkginfo-1.6.1 readme-renderer-28.0 requests-toolbelt-0.9.1 rfc3986-1.4.0 tensorflow-object-detection-api-0.1.1 twine-3.2.0
```

In [12]:

```
! mkdir '/content/content/data/tf_record'
```

In [13]:

```
!python /content/content/data/generate_tfrecord.py
```

```
fr,epoch ,concepts, concepts, aug_id, generate_tfrecords.py
--csv_input=/content/content/data/label_csv/original_plus_aug_combine.csv \
--output_path=/content/content/data/tf_record/train.record \
--image_dir=/content/content/data/Images/train_images
```

```
2020-12-12 13:52:16.817094: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudart.so.10.1
Successfully created the TFRecords: /content/content/data/tf_record/train.record
```

In [14]:

```
!python /content/content/data/generate_tfrecord.py
--csv_input=/content/content/data/label_csv/test_resized_label.csv \
--output_path=/content/content/data/tf_record/test.record \
--image_dir=/content/content/data/Images/test_images
```

```
2020-12-12 13:52:56.647387: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudart.so.10.1
Successfully created the TFRecords: /content/content/data/tf_record/test.record
```

Start With Training:

Installing pre-requisites

In []:

```
shutil.copy('/content/drive/MyDrive/faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8.tar.gz','/content')
```

Out[]:

```
'/content/faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8.tar.gz'
```

In []:

```
#unzipped model weights file
%cd /content
!tar -xvf /content/faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8.tar.gz
```

```
/content
faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8/
faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8/checkpoint/
faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8/checkpoint/ckpt-0.data-00000-of-00001
faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8/checkpoint/checkpoint
faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8/checkpoint/ckpt-0.index
faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8/pipeline.config
faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8/saved_model/
faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8/saved_model/saved_model.pb
faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8/saved_model/variables/
faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8/saved_model/variables/variables.data-00000-of-00001
faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8/saved_model/variables/variables.index
```

In []:

```
#clone tensorflow model repo;
!git clone https://github.com/tensorflow/models.git
```

```
Cloning into 'models'...
remote: Enumerating objects: 97, done.
remote: Counting objects: 100% (97/97), done.
remote: Compressing objects: 100% (91/91), done.
remote: Total 48117 (delta 38), reused 64 (delta 5), pack-reused 48020
Receiving objects: 100% (48117/48117), 552.16 MiB | 36.71 MiB/s, done.
Resolving deltas: 100% (33137/33137), done.
```

In []:

```
%cd '/content/models/research/object_detection/builders'
from object_detection.utils import label_map_util
from object_detection.utils import visualization_utils as viz_utils

!pip install tf_slim
!pip install lvis
!pip install tf-models-official

/content/models/research/object_detection/builders
Collecting tf_slim
  Downloading
    https://files.pythonhosted.org/packages/02/97/b0f4a64df018ca018cc035d44f2ef08f91e2e8aa67271f6f19633
    ff7/tf_slim-1.1.0-py2.py3-none-any.whl (352kB)
      |████████| 358kB 9.1MB/s
Requirement already satisfied: absl-py>=0.2.2 in /usr/local/lib/python3.6/dist-packages (from
tf_slim) (0.10.0)
Requirement already satisfied: six in /usr/local/lib/python3.6/dist-packages (from absl-py>=0.2.2-
>tf_slim) (1.15.0)
Installing collected packages: tf-slim
Successfully installed tf-slim-1.1.0
Collecting lvis
  Downloading
    https://files.pythonhosted.org/packages/72/b6/1992240ab48310b5360bfdd1d53163f43bb97d90dc5dc723c67d4
    e78/lvis-0.5.3-py3-none-any.whl
Requirement already satisfied: six>=1.12.0 in /usr/local/lib/python3.6/dist-packages (from lvis)
(1.15.0)
Requirement already satisfied: matplotlib>=3.1.1 in /usr/local/lib/python3.6/dist-packages (from
lvis) (3.2.2)
Requirement already satisfied: kiwisolver>=1.1.0 in /usr/local/lib/python3.6/dist-packages (from
lvis) (1.3.1)
Requirement already satisfied: numpy>=1.18.2 in /usr/local/lib/python3.6/dist-packages (from lvis)
(1.18.5)
Requirement already satisfied: pyparsing>=2.4.0 in /usr/local/lib/python3.6/dist-packages (from
lvis) (2.4.7)
Requirement already satisfied: cycler>=0.10.0 in /usr/local/lib/python3.6/dist-packages (from
lvis) (0.10.0)
Requirement already satisfied: Cython>=0.29.12 in /usr/local/lib/python3.6/dist-packages (from
lvis) (0.29.21)
Requirement already satisfied: opencv-python>=4.1.0.25 in /usr/local/lib/python3.6/dist-packages
(from lvis) (4.1.2.30)
Requirement already satisfied: python-dateutil>=2.8.0 in /usr/local/lib/python3.6/dist-packages
(from lvis) (2.8.1)
Installing collected packages: lvis
Successfully installed lvis-0.5.3
Collecting tf-models-official
  Downloading
    https://files.pythonhosted.org/packages/5b/33/91e5e90e3e96292717245d3fe87eb3b35b07c8a2113f2da7f482c
    cdb/tf_models_official-2.3.0-py2.py3-none-any.whl (840kB)
      |████████| 849kB 7.6MB/s
Requirement already satisfied: matplotlib in /usr/local/lib/python3.6/dist-packages (from tf-
models-official) (3.2.2)
Requirement already satisfied: kaggle>=1.3.9 in /usr/local/lib/python3.6/dist-packages (from tf-
models-official) (1.5.9)
Requirement already satisfied: pyyaml in /usr/local/lib/python3.6/dist-packages (from tf-models-of-
ficial) (3.13)
Collecting py-cpuinfo>=3.3.0
  Downloading
    https://files.pythonhosted.org/packages/f6/f5/8e6e85ce2e9f6e05040cf0d4e26f43a4718bcc4bce988b433276c
    5c1/py-cpuinfo-7.0.0.tar.gz (95kB)
      |████████| 102kB 10.1MB/s
Requirement already satisfied: google-cloud-bigquery>=0.31.0 in /usr/local/lib/python3.6/dist-
packages (from tf-models-official) (1.21.0)
Requirement already satisfied: gin-config in /usr/local/lib/python3.6/dist-packages (from tf-
models-official) (0.3.0)
Requirement already satisfied: tensorflow>=2.3.0 in /usr/local/lib/python3.6/dist-packages (from
tf-models-official) (2.3.0)
Requirement already satisfied: six in /usr/local/lib/python3.6/dist-packages (from tf-models-
official) (1.15.0)
Requirement already satisfied: tensorflow-hub>=0.6.0 in /usr/local/lib/python3.6/dist-packages
(from tf-models-official) (0.10.0)
Requirement already satisfied: tf-slim>=1.1.0 in /usr/local/lib/python3.6/dist-packages (from tf-m
odels-official) (1.1.0)
Requirement already satisfied: numpy>=1.15.4 in /usr/local/lib/python3.6/dist-packages (from tf-
models-official) (1.18.5)
Requirement already satisfied: tensorflow-datasets in /usr/local/lib/python3.6/dist-packages (from
```

```
tf-models-official) (4.0.1)
Collecting tensorflow-model-optimization>=0.2.1
    Downloading
      https://files.pythonhosted.org/packages/55/38/4fd48ealbfcb0b6e36d949025200426fe9c3a8bfae029f0973d85
      a5a/tensorflow_model_optimization-0.5.0-py3-none-any.whl (172kB)
      |████████████████████████████████| 174kB 15.7MB/s
Collecting sentencepiece
    Downloading
      https://files.pythonhosted.org/packages/e5/2d/6d4ca4bef9a67070fa1cac508606328329152b1df10bdf31fb6e4
      894/sentencepiece-0.1.94-cp36-cp36m-manylinux2014_x86_64.whl (1.1MB)
      |████████████████████████████████| 1.1MB 19.0MB/s
Requirement already satisfied: dataclasses in /usr/local/lib/python3.6/dist-packages (from tf-
models-official) (0.8)
Requirement already satisfied: Cython in /usr/local/lib/python3.6/dist-packages (from tf-models-of-
ficial) (0.29.21)
Requirement already satisfied: psutil>=5.4.3 in /usr/local/lib/python3.6/dist-packages (from tf-
models-official) (5.4.8)
Requirement already satisfied: tensorflow-addons in /usr/local/lib/python3.6/dist-packages (from tf-
models-official) (0.8.3)
Requirement already satisfied: scipy>=0.19.1 in /usr/local/lib/python3.6/dist-packages (from tf-
models-official) (1.4.1)
Requirement already satisfied: google-api-python-client>=1.6.7 in /usr/local/lib/python3.6/dist-pa-
ckages (from tf-models-official) (1.7.12)
Requirement already satisfied: pandas>=0.22.0 in /usr/local/lib/python3.6/dist-packages (from tf-m
odels-official) (1.1.4)
Requirement already satisfied: Pillow in /usr/local/lib/python3.6/dist-packages (from tf-models-of-
ficial) (7.0.0)
Collecting opencv-python-headless
    Downloading
      https://files.pythonhosted.org/packages/08/e9/57d869561389884136be65a2d1bc038fe50171e2ba348fda269a4
      032/opencv_python_headless-4.4.0.46-cp36-cp36m-manylinux2014_x86_64.whl (36.7MB)
      |████████████████████████████████| 36.7MB 87kB/s
Requirement already satisfied: python-dateutil>=2.1 in /usr/local/lib/python3.6/dist-packages
  (from matplotlib->tf-models-official) (2.8.1)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.6/dist-packages (from
matplotlib->tf-models-official) (0.10.0)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.6/dist-packages (from
matplotlib->tf-models-official) (1.3.1)
Requirement already satisfied: pyparsing!=2.0.4,!>=2.1.2,!>=2.1.6,>=2.0.1 in
  /usr/local/lib/python3.6/dist-packages (from matplotlib->tf-models-official) (2.4.7)
Requirement already satisfied: urllib3 in /usr/local/lib/python3.6/dist-packages (from
kaggle>=1.3.9->tf-models-official) (1.24.3)
Requirement already satisfied: requests in /usr/local/lib/python3.6/dist-packages (from
kaggle>=1.3.9->tf-models-official) (2.23.0)
Requirement already satisfied: slugify in /usr/local/lib/python3.6/dist-packages (from
kaggle>=1.3.9->tf-models-official) (0.0.1)
Requirement already satisfied: certifi in /usr/local/lib/python3.6/dist-packages (from
kaggle>=1.3.9->tf-models-official) (2020.11.8)
Requirement already satisfied: tqdm in /usr/local/lib/python3.6/dist-packages (from kaggle>=1.3.9-
>tf-models-official) (4.41.1)
Requirement already satisfied: python-slugify in /usr/local/lib/python3.6/dist-packages (from
kaggle>=1.3.9->tf-models-official) (4.0.1)
Requirement already satisfied: google-cloud-core<2.0dev,>=1.0.3 in /usr/local/lib/python3.6/dist-
packages (from google-cloud-bigquery>=0.31.0->tf-models-official) (1.0.3)
Requirement already satisfied: google-resumable-media!=0.4.0,<0.5.0dev,>=0.3.1 in
  /usr/local/lib/python3.6/dist-packages (from google-cloud-bigquery>=0.31.0->tf-models-official) (0
.4.1)
Requirement already satisfied: protobuf>=3.6.0 in /usr/local/lib/python3.6/dist-packages (from
google-cloud-bigquery>=0.31.0->tf-models-official) (3.12.4)
Requirement already satisfied: wheel>=0.26 in /usr/local/lib/python3.6/dist-packages (from
tensorflow>=2.3.0->tf-models-official) (0.35.1)
Requirement already satisfied: tensorboard<3,>=2.3.0 in /usr/local/lib/python3.6/dist-packages
  (from tensorflow>=2.3.0->tf-models-official) (2.3.0)
Requirement already satisfied: opt-einsum>=2.3.2 in /usr/local/lib/python3.6/dist-packages (from
tensorflow>=2.3.0->tf-models-official) (3.3.0)
Requirement already satisfied: absl-py>=0.7.0 in /usr/local/lib/python3.6/dist-packages (from
tensorflow>=2.3.0->tf-models-official) (0.10.0)
Requirement already satisfied: wrapt>=1.11.1 in /usr/local/lib/python3.6/dist-packages (from
tensorflow>=2.3.0->tf-models-official) (1.12.1)
Requirement already satisfied: grpcio>=1.8.6 in /usr/local/lib/python3.6/dist-packages (from
tensorflow>=2.3.0->tf-models-official) (1.33.2)
Requirement already satisfied: tensorflow-estimator<2.4.0,>=2.3.0 in
  /usr/local/lib/python3.6/dist-packages (from tensorflow>=2.3.0->tf-models-official) (2.3.0)
Requirement already satisfied: termcolor>=1.1.0 in /usr/local/lib/python3.6/dist-packages (from
tensorflow>=2.3.0->tf-models-official) (1.1.0)
Requirement already satisfied: h5py<2.11.0,>=2.10.0 in /usr/local/lib/python3.6/dist-packages
  (from tensorflow>=2.3.0->tf-models-official) (2.10.0)
```

```
Requirement already satisfied: gast==0.3.3 in /usr/local/lib/python3.6/dist-packages (from tensorflow>=2.3.0->tf-models-official) (0.3.3)
Requirement already satisfied: google-pasta>=0.1.8 in /usr/local/lib/python3.6/dist-packages (from tensorflow>=2.3.0->tf-models-official) (0.2.0)
Requirement already satisfied: keras-preprocessing<1.2,>=1.1.1 in /usr/local/lib/python3.6/dist-packages (from tensorflow>=2.3.0->tf-models-official) (1.1.2)
Requirement already satisfied: astunparse==1.6.3 in /usr/local/lib/python3.6/dist-packages (from tensorflow>=2.3.0->tf-models-official) (1.6.3)
Requirement already satisfied: future in /usr/local/lib/python3.6/dist-packages (from tensorflow-datasets->tf-models-official) (0.16.0)
Requirement already satisfied: promise in /usr/local/lib/python3.6/dist-packages (from tensorflow-datasets->tf-models-official) (2.3)
Requirement already satisfied: importlib-resources; python_version < "3.9" in /usr/local/lib/python3.6/dist-packages (from tensorflow-datasets->tf-models-official) (3.3.0)
Requirement already satisfied: dill in /usr/local/lib/python3.6/dist-packages (from tensorflow-datasets->tf-models-official) (0.3.3)
Requirement already satisfied: dm-tree in /usr/local/lib/python3.6/dist-packages (from tensorflow-datasets->tf-models-official) (0.1.5)
Requirement already satisfied: attrs>=18.1.0 in /usr/local/lib/python3.6/dist-packages (from tensorflow-datasets->tf-models-official) (20.3.0)
Requirement already satisfied: tensorflow-metadata in /usr/local/lib/python3.6/dist-packages (from tensorflow-datasets->tf-models-official) (0.25.0)
Requirement already satisfied: typeguard in /usr/local/lib/python3.6/dist-packages (from tensorflow-addons->tf-models-official) (2.7.1)
Requirement already satisfied: httpplib2<1dev,>=0.17.0 in /usr/local/lib/python3.6/dist-packages (from google-api-python-client>=1.6.7->tf-models-official) (0.17.4)
Requirement already satisfied: uritemplate<4dev,>=3.0.0 in /usr/local/lib/python3.6/dist-packages (from google-api-python-client>=1.6.7->tf-models-official) (3.0.1)
Requirement already satisfied: google-auth>=1.4.1 in /usr/local/lib/python3.6/dist-packages (from google-api-python-client>=1.6.7->tf-models-official) (1.17.2)
Requirement already satisfied: google-auth-httpplib2>=0.0.3 in /usr/local/lib/python3.6/dist-packages (from google-api-python-client>=1.6.7->tf-models-official) (0.0.4)
Requirement already satisfied: pytz>=2017.2 in /usr/local/lib/python3.6/dist-packages (from pandas>=0.22.0->tf-models-official) (2018.9)
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.6/dist-packages (from requests->kaggle>=1.3.9->tf-models-official) (2.10)
Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.6/dist-packages (from requests->kaggle>=1.3.9->tf-models-official) (3.0.4)
Requirement already satisfied: text-unidecode>=1.3 in /usr/local/lib/python3.6/dist-packages (from python-slugify->kaggle>=1.3.9->tf-models-official) (1.3)
Requirement already satisfied: google-api-core<2.0.0dev,>=1.14.0 in /usr/local/lib/python3.6/dist-packages (from google-cloud-core<2.0dev,>=1.0.3->google-cloud-bigquery>=0.31.0->tf-models-official) (1.16.0)
Requirement already satisfied: setuptools in /usr/local/lib/python3.6/dist-packages (from protobuf>=3.6.0->google-cloud-bigquery>=0.31.0->tf-models-official) (50.3.2)
Requirement already satisfied: tensorboard-plugin-wit>=1.6.0 in /usr/local/lib/python3.6/dist-packages (from tensorboard<3,>=2.3.0->tensorflow>=2.3.0->tf-models-official) (1.7.0)
Requirement already satisfied: google-auth-oauthlib<0.5,>=0.4.1 in /usr/local/lib/python3.6/dist-packages (from tensorboard<3,>=2.3.0->tensorflow>=2.3.0->tf-models-official) (0.4.2)
Requirement already satisfied: markdown>=2.6.8 in /usr/local/lib/python3.6/dist-packages (from tensorboard<3,>=2.3.0->tensorflow>=2.3.0->tf-models-official) (3.3.3)
Requirement already satisfied: werkzeug>=0.11.15 in /usr/local/lib/python3.6/dist-packages (from tensorboard<3,>=2.3.0->tensorflow>=2.3.0->tf-models-official) (1.0.1)
Requirement already satisfied: zipp>=0.4; python_version < "3.8" in /usr/local/lib/python3.6/dist-packages (from importlib-resources; python_version < "3.9"->tensorflow-datasets->tf-models-official) (3.4.0)
Requirement already satisfied: googleapis-common-protos<2,>=1.52.0 in /usr/local/lib/python3.6/dist-packages (from tensorflow-metadata->tensorflow-datasets->tf-models-official) (1.52.0)
Requirement already satisfied: cachetools<5.0,>=2.0.0 in /usr/local/lib/python3.6/dist-packages (from google-auth>=1.4.1->google-api-python-client>=1.6.7->tf-models-official) (4.1.1)
Requirement already satisfied: pyasn1-modules>=0.2.1 in /usr/local/lib/python3.6/dist-packages (from google-auth>=1.4.1->google-api-python-client>=1.6.7->tf-models-official) (0.2.8)
Requirement already satisfied: rsa<5,>=3.1.4; python_version >= "3" in /usr/local/lib/python3.6/dist-packages (from google-auth>=1.4.1->google-api-python-client>=1.6.7->tf-models-official) (4.6)
Requirement already satisfied: requests-oauthlib>=0.7.0 in /usr/local/lib/python3.6/dist-packages (from google-auth-oauthlib<0.5,>=0.4.1->tensorboard<3,>=2.3.0->tensorflow>=2.3.0->tf-models-official) (1.3.0)
Requirement already satisfied: importlib-metadata; python_version < "3.8" in /usr/local/lib/python3.6/dist-packages (from markdown>=2.6.8->tensorboard<3,>=2.3.0->tensorflow>=2.3.0->tf-models-official) (2.0.0)
Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in /usr/local/lib/python3.6/dist-packages (from pyasn1-modules>=0.2.1->google-auth>=1.4.1->google-api-python-client>=1.6.7->tf-models-official) (0.4.8)
Requirement already satisfied: oauthlib>=3.0.0 in /usr/local/lib/python3.6/dist-packages (from requests-oauthlib>=0.7.0->google-auth-oauthlib<0.5.>=0.4.1->tensorboard<3.>=2.3.0-
```

```
log4j-1.2.17.jar: warning: google auth credentials v2, using conservative, v2.0.0  
>tensorflow>=2.3.0->tf-models-official) (3.1.0)  
Building wheels for collected packages: py-cpuinfo  
  Building wheel for py-cpuinfo (setup.py) ... done  
    Created wheel for py-cpuinfo: filename=py_cpuinfo-7.0.0-cp36-none-any.whl size=20071  
sha256=0fe63bc6e8f494dc51ed54993f77bfcc3359e205e900216cf455d55a29f2c397  
  Stored in directory:  
/root/.cache/pip/wheels/f1/93/7b/127daf0c3a5a49feb2fec468d508067c733fba5192f726ad1  
Successfully built py-cpuinfo  
Installing collected packages: py-cpuinfo, tensorflow-model-optimization, sentencepiece, opencv-python-headless, tf-models-official  
Successfully installed opencv-python-headless-4.4.0.46 py-cpuinfo-7.0.0 sentencepiece-0.1.94 tensorflow-model-optimization-0.5.0 tf-models-official-2.3.0
```

In []:

```
%cd '/content/models/research'  
  
!protoc object_detection/protos/*.proto --python_out=.  
!python setup.py build  
!python setup.py install  
  
os.environ['PYTHONPATH'] += ':/content/models/research:/content/models/research/slim'  
  
/content/models/research  
running build  
running build_py  
creating build  
creating build/lib  
creating build/lib/object_detection  
copying object_detection/exporter_lib_v2.py -> build/lib/object_detection  
copying object_detection/export_tflite_ssd_graph_lib_tf1_test.py -> build/lib/object_detection  
copying object_detection/exporter_main_v2.py -> build/lib/object_detection  
copying object_detection/model_lib.py -> build/lib/object_detection  
copying object_detection/model_main_tf2.py -> build/lib/object_detection  
copying object_detection/exporter.py -> build/lib/object_detection  
copying object_detection/model_tpu_main.py -> build/lib/object_detection  
copying object_detection/export_inference_graph.py -> build/lib/object_detection  
copying object_detection/model_lib_v2.py -> build/lib/object_detection  
copying object_detection/eval_util.py -> build/lib/object_detection  
copying object_detection/eval_util_test.py -> build/lib/object_detection  
copying object_detection/export_tflite_graph_lib_tf2.py -> build/lib/object_detection  
copying object_detection/model_main.py -> build/lib/object_detection  
copying object_detection/exporter_lib_tf2_test.py -> build/lib/object_detection  
copying object_detection/model_lib_tf2_test.py -> build/lib/object_detection  
copying object_detection/export_tflite_graph_lib_tf2_test.py -> build/lib/object_detection  
copying object_detection/export_tflite_ssd_graph.py -> build/lib/object_detection  
copying object_detection/model_hparams.py -> build/lib/object_detection  
copying object_detection/exporter_tf1_test.py -> build/lib/object_detection  
copying object_detection/inputs_test.py -> build/lib/object_detection  
copying object_detection/model_lib_tf1_test.py -> build/lib/object_detection  
copying object_detection/export_tflite_graph_tf2.py -> build/lib/object_detection  
copying object_detection/inputs.py -> build/lib/object_detection  
copying object_detection/export_tflite_ssd_graph_lib.py -> build/lib/object_detection  
copying object_detection/__init__.py -> build/lib/object_detection  
creating build/lib/object_detection/dataset_tools  
copying object_detection/dataset_tools/oid_hierarchical_labels_expansion.py ->  
build/lib/object_detection/dataset_tools  
copying object_detection/dataset_tools/create_kitti_tf_record_test.py ->  
build/lib/object_detection/dataset_tools  
copying object_detection/dataset_tools/oid_hierarchical_labels_expansion_test.py ->  
build/lib/object_detection/dataset_tools  
copying object_detection/dataset_tools/create_coco_tf_record_test.py ->  
build/lib/object_detection/dataset_tools  
copying object_detection/dataset_tools/seq_example_util_test.py ->  
build/lib/object_detection/dataset_tools  
copying object_detection/dataset_tools/create_oid_tf_record.py ->  
build/lib/object_detection/dataset_tools  
copying object_detection/dataset_tools/tf_record_creation_util_test.py ->  
build/lib/object_detection/dataset_tools  
copying object_detection/dataset_tools/create_coco_tf_record.py ->  
build/lib/object_detection/dataset_tools  
copying object_detection/dataset_tools/create_pet_tf_record.py ->  
build/lib/object_detection/dataset_tools  
copying object_detection/dataset_tools/oid_tfrecord_creation.py ->  
build/lib/object_detection/dataset_tools
```

```
copying object_detection/dataset_tools/tf_record_creation_util.py ->
build/lib/object_detection/dataset_tools
copying object_detection/dataset_tools/create_kitti_tf_record.py ->
build/lib/object_detection/dataset_tools
copying object_detection/dataset_tools/create_pascal_tf_record_test.py ->
build/lib/object_detection/dataset_tools
copying object_detection/dataset_tools/seq_example_util.py ->
build/lib/object_detection/dataset_tools
copying object_detection/dataset_tools/create_ava_actions_tf_record.py ->
build/lib/object_detection/dataset_tools
copying object_detection/dataset_tools/create_pascal_tf_record.py ->
build/lib/object_detection/dataset_tools
copying object_detection/dataset_tools/oid_tfrecord_creation_test.py ->
build/lib/object_detection/dataset_tools
copying object_detection/dataset_tools/_init__.py -> build/lib/object_detection/dataset_tools
creating build/lib/object_detection/inference
copying object_detection/inference/infer_detections.py -> build/lib/object_detection/inference
copying object_detection/inference/detection_inference_tf1_test.py ->
build/lib/object_detection/inference
copying object_detection/inference/detection_inference.py -> build/lib/object_detection/inference
copying object_detection/inference/_init__.py -> build/lib/object_detection/inference
creating build/lib/object_detection/builders
copying object_detection/builders/anchor_generator_builder_test.py ->
build/lib/object_detection/builders
copying object_detection/builders/optimizer_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/calibration_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/post_processing_builder.py ->
build/lib/object_detection/builders
copying object_detection/builders/calibration_builder_test.py ->
build/lib/object_detection/builders
copying object_detection/builders/optimizer_builder_tf1_test.py ->
build/lib/object_detection/builders
copying object_detection/builders/preprocessor_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/box_coder_builder_test.py -> build/lib/object_detection/builders
copying object_detection/builders/dataset_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/model_builder_tf2_test.py -> build/lib/object_detection/builders
copying object_detection/builders/model_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/box_predictor_builder_test.py ->
build/lib/object_detection/builders
copying object_detection/builders/matcher_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/input_reader_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/hyperparams_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/decoder_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/box_predictor_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/dataset_builder_test.py -> build/lib/object_detection/builders
copying object_detection/builders/optimizer_builder_tf2_test.py ->
build/lib/object_detection/builders
copying object_detection/builders/graph_rewriter_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/anchor_generator_builder.py ->
build/lib/object_detection/builders
copying object_detection/builders/input_reader_builder_tf1_test.py ->
build/lib/object_detection/builders
copying object_detection/builders/post_processing_builder_test.py ->
build/lib/object_detection/builders
copying object_detection/builders/region_similarity_calculator_builder_test.py ->
build/lib/object_detection/builders
copying object_detection/builders/image_resizer_builder_test.py ->
build/lib/object_detection/builders
copying object_detection/builders/model_builder_test.py -> build/lib/object_detection/builders
copying object_detection/builders/target_assigner_builder_test.py ->
build/lib/object_detection/builders
copying object_detection/builders/losses_builder_test.py -> build/lib/object_detection/builders
copying object_detection/builders/hyperparams_builder_test.py ->
build/lib/object_detection/builders
copying object_detection/builders/box_coder_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/losses_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/preprocessor_builder_test.py ->
build/lib/object_detection/builders
copying object_detection/builders/graph_rewriter_builder_tf1_test.py ->
build/lib/object_detection/builders
copying object_detection/builders/target_assigner_builder.py ->
build/lib/object_detection/builders
copying object_detection/builders/image_resizer_builder.py -> build/lib/object_detection/builders
copying object_detection/builders/model_builder_tf1_test.py -> build/lib/object_detection/builders
copying object_detection/builders/decoder_builder_test.py -> build/lib/object_detection/builders
copying object_detection/builders/_init__.py -> build/lib/object_detection/builders
copying object_detection/builders/region_similarity_calculator_builder.py ->
```

```
build/lib/object_detection/builders
copying object_detection/builders/matcher_builder_test.py -> build/lib/object_detection/builders
creating build/lib/object_detection/anchor_generators
copying object_detection/anchor_generators/multiscale_grid_anchor_generator_test.py ->
build/lib/object_detection/anchor_generators
copying object_detection/anchor_generators/grid_anchor_generator_test.py ->
build/lib/object_detection/anchor_generators
copying object_detection/anchor_generators/multiple_grid_anchor_generator_test.py ->
build/lib/object_detection/anchor_generators
copying object_detection/anchor_generators/flexible_grid_anchor_generator.py ->
build/lib/object_detection/anchor_generators
copying object_detection/anchor_generators/grid_anchor_generator.py ->
build/lib/object_detection/anchor_generators
copying object_detection/anchor_generators/flexible_grid_anchor_generator_test.py ->
build/lib/object_detection/anchor_generators
copying object_detection/anchor_generators/multiple_grid_anchor_generator.py ->
build/lib/object_detection/anchor_generators
copying object_detection/anchor_generators/_init__.py ->
build/lib/object_detection/anchor_generators
copying object_detection/anchor_generators/multiscale_grid_anchor_generator.py ->
build/lib/object_detection/anchor_generators
creating build/lib/object_detection/protos
copying object_detection/protos/optimizer_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/calibration_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/argmax_matcher_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/hyperparams_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/faster_rcnn_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/box_predictor_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/string_int_label_map_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/losses_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/box_coder_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/graph_rewriter_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/keypoint_box_coder_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/input_reader_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/ssd_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/region_similarity_calculator_pb2.py ->
build/lib/object_detection/protos
copying object_detection/protos/flexible_grid_anchor_generator_pb2.py ->
build/lib/object_detection/protos
copying object_detection/protos/image_resizer_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/pipeline_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/square_box_coder_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/multiscale_anchor_generator_pb2.py ->
build/lib/object_detection/protos
copying object_detection/protos/center_net_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/model_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/bipartite_matcher_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/post_processing_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/faster_rcnn_box_coder_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/train_pb2.py -> build/lib/object_detection/protos
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copying object_detection/protos/matcher_pb2.py -> build/lib/object_detection/protos
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copying object_detection/protos/anchor_generator_pb2.py -> build/lib/object_detection/protos
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copying object_detection/protos/ssd_anchor_generator_pb2.py -> build/lib/object_detection/protos
copying object_detection/protos/preprocessor_pb2.py -> build/lib/object_detection/protos
creating build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_edgetpu_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_resnet_v1_fpn_keras_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_v2_fpn_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/center_net_mobilenet_v2_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/feature_map_generators.py -> build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_v1_feature_extractor_tf1_test.py ->
build/lib/object_detection/models
copying object_detection/models/faster_rcnn_mobilenet_v1_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/faster_rcnn_resnet_v1_fpn_keras_feature_extractor_tf2_test.py -> b
uild/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_v2_fpn_feature_extractor_tf2_test.py ->
```

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build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_v2_mnasfpn_feature_extractor.py ->
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copying object_detection/models/ssd_mobiledet_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_v1_fpn_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_v2_keras_feature_extractor.py ->
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build/lib/object_detection/models
copying object_detection/models/center_net_resnet_v1_fpn_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_v2_fpn_keras_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/faster_rcnn_inception_resnet_v2_keras_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/bidirectional_feature_pyramid_generators_tf2_test.py ->
build/lib/object_detection/models
copying object_detection/models/faster_rcnn_resnet_v1_feature_extractor_tf1_test.py ->
build/lib/object_detection/models
copying object_detection/models/center_net_resnet_feature_extractor_tf2_test.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_v2_mnasfpn_feature_extractor_tf1_test.py ->
build/lib/object_detection/models
copying object_detection/models/embedded_ssd_mobilenet_v1_feature_extractor_tf1_test.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_edgetpu_feature_extractor_tf1_test.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_mobiledet_feature_extractor_tf1_test.py ->
build/lib/object_detection/models
copying object_detection/models/center_net_resnet_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_v1_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_efficientnet_bifpn_feature_extractor_tf2_test.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_resnet_v1_fpn_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_v1_fpn_feature_extractor_tf2_test.py ->
build/lib/object_detection/models
copying object_detection/models/feature_map_generators_test.py ->
build/lib/object_detection/models
copying object_detection/models/faster_rcnn_inception_resnet_v2_feature_extractor_tf1_test.py -> b
uild/lib/object_detection/models
copying object_detection/models/faster_rcnn_inception_resnet_v2_feature_extractor.py ->
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object_detection/models/faster_rcnn_inception_resnet_v2_keras_feature_extractor_tf2_test.py -> bui
ld/lib/object_detection/models
copying object_detection/models/faster_rcnn_nas_feature_extractor_tf1_test.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_v1_ppn_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/center_net_mobilenet_v2_feature_extractor_tf2_test.py ->
build/lib/object_detection/models
copying object_detection/models/faster_rcnn_nas_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/center_net_mobilenet_v2_fpn_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_inception_v2_feature_extractor_tf1_test.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_resnet_v1_fpn_feature_extractor_tf2_test.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_v2_feature_extractor_tf2_test.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_mobilenet_v2_fpn_feature_extractor_tf1_test.py ->
build/lib/object_detection/models
copying object_detection/models/bidirectional_feature_pyramid_generators.py ->
build/lib/object_detection/models
copying object_detection/models/faster_rcnn_pnas_feature_extractor.py ->
build/lib/object_detection/models
copying object_detection/models/center_net_hourglass_feature_extractor_tf2_test.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_inception_v3_feature_extractor_tf1_test.py ->
build/lib/object_detection/models
copying object_detection/models/ssd_resnet_v1_ppn_feature_extractor.py ->
```

```
build/lib/object_detection/models      - - - - -  
copying object_detection/models/ssd_mobilenet_v1_fpn_keras_feature_extractor.py ->  
build/lib/object_detection/models  
copying object_detection/models/faster_rcnn_inception_v2_feature_extractor.py ->  
build/lib/object_detection/models  
copying object_detection/models/faster_rcnn_resnet_keras_feature_extractor.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_mobilenet_v1_fpn_feature_extractor_tf1_test.py ->  
build/lib/object_detection/models  
copying object_detection/models/faster_rcnn_pnas_feature_extractor_tf1_test.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_mobilenet_v2_feature_extractor_tf1_test.py ->  
build/lib/object_detection/models  
copying object_detection/models/center_net_resnet_v1_fpn_feature_extractor_tf2_test.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_mobilenet_v3_feature_extractor_testbase.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_pnasnet_feature_extractor_tf1_test.py ->  
build/lib/object_detection/models  
copying object_detection/models/faster_rcnn_resnet_v1_feature_extractor.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_inception_v3_feature_extractor.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_resnet_v1_ppn_feature_extractor_tf1_test.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_mobilenet_v1_ppn_feature_extractor_tf1_test.py ->  
build/lib/object_detection/models  
copying object_detection/models/embedded_ssd_mobilenet_v1_feature_extractor.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_resnet_v1_ppn_feature_extractor_testbase.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_efficientnet_bifpn_feature_extractor.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_feature_extractor_test.py -> build/lib/object_detection/models  
copying object_detection/models/ssd_resnet_v1_fpn_feature_extractor_testbase.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_mobilenet_v1_feature_extractor_tf2_test.py ->  
build/lib/object_detection/models  
copying object_detection/models/center_net_hourglass_feature_extractor.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_mobilenet_v3_feature_extractor_tf1_test.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_resnet_v1_fpn_feature_extractor_tf1_test.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_mobilenet_v2_feature_extractor.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_mobilenet_v3_feature_extractor.py ->  
build/lib/object_detection/models  
copying object_detection/models/faster_rcnn_resnet_v1_fpn_keras_feature_extractor.py ->  
build/lib/object_detection/models  
copying object_detection/models/_init_.py -> build/lib/object_detection/models  
copying object_detection/models/ssd_mobilenet_edgetpu_feature_extractor_testbase.py ->  
build/lib/object_detection/models  
copying object_detection/models/center_net_mobilenet_v2_fpn_feature_extractor_tf2_test.py ->  
build/lib/object_detection/models  
copying object_detection/models/faster_rcnn_mobilenet_v1_feature_extractor_tf1_test.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_inception_v2_feature_extractor.py ->  
build/lib/object_detection/models  
copying object_detection/models/faster_rcnn_resnet_keras_feature_extractor_tf2_test.py ->  
build/lib/object_detection/models  
copying object_detection/models/ssd_mobilenet_v1_keras_feature_extractor.py ->  
build/lib/object_detection/models  
copying object_detection/models/faster_rcnn_inception_v2_feature_extractor_tf1_test.py ->  
build/lib/object_detection/models  
creating build/lib/object_detection/legacy  
copying object_detection/legacy/trainer_tf1_test.py -> build/lib/object_detection/legacy  
copying object_detection/legacy/train.py -> build/lib/object_detection/legacy  
copying object_detection/legacy/trainer.py -> build/lib/object_detection/legacy  
copying object_detection/legacy/evaluator.py -> build/lib/object_detection/legacy  
copying object_detection/legacy/eval.py -> build/lib/object_detection/legacy  
copying object_detection/legacy/_init_.py -> build/lib/object_detection/legacy  
creating build/lib/object_detection/tpu_exporters  
copying object_detection/tpu_exporters/ssd.py -> build/lib/object_detection/tpu_exporters  
copying object_detection/tpu_exporters/faster_rcnn.py -> build/lib/object_detection/tpu_exporters  
copying object_detection/tpu_exporters/utils.py -> build/lib/object_detection/tpu_exporters  
copying object_detection/tpu_exporters/export saved model tpu lib tf1 test.py ->
```

```
-- build/lib/object_detection/tpu_exporters
copying object_detection/tpu_exporters/utils_test.py -> build/lib/object_detection/tpu_exporters
copying object_detection/tpu_exporters/export_saved_model_tpu.py ->
build/lib/object_detection/tpu_exporters
copying object_detection/tpu_exporters/__init__.py -> build/lib/object_detection/tpu_exporters
copying object_detection/tpu_exporters/export_saved_model_tpu_lib.py ->
build/lib/object_detection/tpu_exporters
creating build/lib/object_detection/matchers
copying object_detection/matchers/argmax_matcher.py -> build/lib/object_detection/matchers
copying object_detection/matchers/argmax_matcher_test.py -> build/lib/object_detection/matchers
copying object_detection/matchers/bipartite_matcher.py -> build/lib/object_detection/matchers
copying object_detection/matchers/hungarian_matcher.py -> build/lib/object_detection/matchers
copying object_detection/matchers/bipartite_matcher_tf1_test.py ->
build/lib/object_detection/matchers
copying object_detection/matchers/hungarian_matcher_tf2_test.py ->
build/lib/object_detection/matchers
copying object_detection/matchers/__init__.py -> build/lib/object_detection/matchers
creating build/lib/object_detection/utils
copying object_detection/utils/dataset_util.py -> build/lib/object_detection/utils
copying object_detection/utils/np_box_mask_list.py -> build/lib/object_detection/utils
copying object_detection/utils/vrd_evaluation.py -> build/lib/object_detection/utils
copying object_detection/utils/model_util_tf2_test.py -> build/lib/object_detection/utils
copying object_detection/utils/np_box_list_test.py -> build/lib/object_detection/utils
copying object_detection/utils/json_utils.py -> build/lib/object_detection/utils
copying object_detection/utils/tf_version.py -> build/lib/object_detection/utils
copying object_detection/utils/config_util_test.py -> build/lib/object_detection/utils
copying object_detection/utils/target_assigner_utils_test.py -> build/lib/object_detection/utils
copying object_detection/utils/per_image_evaluation.py -> build/lib/object_detection/utils
copying object_detection/utils/test_utils_test.py -> build/lib/object_detection/utils
copying object_detection/utils/object_detection_evaluation.py -> build/lib/object_detection/utils
copying object_detection/utils/per_image_vrd_evaluation.py -> build/lib/object_detection/utils
copying object_detection/utils/np_box_list_ops.py -> build/lib/object_detection/utils
copying object_detection/utils/test_case.py -> build/lib/object_detection/utils
copying object_detection/utils/learning_schedules_test.py -> build/lib/object_detection/utils
copying object_detection/utils/bifpn_utils.py -> build/lib/object_detection/utils
copying object_detection/utils/variables_helper_tf1_test.py -> build/lib/object_detection/utils
copying object_detection/utils/json_utils_test.py -> build/lib/object_detection/utils
copying object_detection/utils/np_box_mask_list_ops_test.py -> build/lib/object_detection/utils
copying object_detection/utils/per_image_evaluation_test.py -> build/lib/object_detection/utils
copying object_detection/utils/autoaugment_utils.py -> build/lib/object_detection/utils
copying object_detection/utils/shape_utils.py -> build/lib/object_detection/utils
copying object_detection/utils/category_util.py -> build/lib/object_detection/utils
copying object_detection/utils/learning_schedules.py -> build/lib/object_detection/utils
copying object_detection/utils/shape_utils_test.py -> build/lib/object_detection/utils
copying object_detection/utils/metrics_test.py -> build/lib/object_detection/utils
copying object_detection/utils/np_mask_ops_test.py -> build/lib/object_detection/utils
copying object_detection/utils/colab_utils.py -> build/lib/object_detection/utils
copying object_detection/utils/vrd_evaluation_test.py -> build/lib/object_detection/utils
copying object_detection/utils/spatial_transform_ops.py -> build/lib/object_detection/utils
copying object_detection/utils/np_box_list.py -> build/lib/object_detection/utils
copying object_detection/utils/patch_ops.py -> build/lib/object_detection/utils
copying object_detection/utils/label_map_util.py -> build/lib/object_detection/utils
copying object_detection/utils/test_utils.py -> build/lib/object_detection/utils
copying object_detection/utils/visualization_utils_test.py -> build/lib/object_detection/utils
copying object_detection/utils/ops_test.py -> build/lib/object_detection/utils
copying object_detection/utils/static_shape.py -> build/lib/object_detection/utils
copying object_detection/utils/spatial_transform_ops_test.py -> build/lib/object_detection/utils
copying object_detection/utils/dataset_util_test.py -> build/lib/object_detection/utils
copying object_detection/utils/target_assigner_utils.py -> build/lib/object_detection/utils
copying object_detection/utils/ops.py -> build/lib/object_detection/utils
copying object_detection/utils/label_map_util_test.py -> build/lib/object_detection/utils
copying object_detection/utils/np_box_mask_list_ops.py -> build/lib/object_detection/utils
copying object_detection/utils/test_case_test.py -> build/lib/object_detection/utils
copying object_detection/utils/np_box_ops.py -> build/lib/object_detection/utils
copying object_detection/utils/variables_helper.py -> build/lib/object_detection/utils
copying object_detection/utils/np_mask_ops.py -> build/lib/object_detection/utils
copying object_detection/utils/np_box_list_ops_test.py -> build/lib/object_detection/utils
copying object_detection/utils/context_manager.py -> build/lib/object_detection/utils
copying object_detection/utils/category_util_test.py -> build/lib/object_detection/utils
copying object_detection/utils/np_box_mask_list_test.py -> build/lib/object_detection/utils
copying object_detection/utils/visualization_utils.py -> build/lib/object_detection/utils
copying object_detection/utils/context_manager_test.py -> build/lib/object_detection/utils
copying object_detection/utils/config_util.py -> build/lib/object_detection/utils
copying object_detection/utils/object_detection_evaluation_test.py ->
build/lib/object_detection/utils
copying object_detection/utils/model_util.py -> build/lib/object_detection/utils
copying object_detection/utils/np_box_ops_test.py -> build/lib/object_detection/utils
```

```
copying object_detection/utils/_init_.py -> build/lib/object_detection/utils
copying object_detection/utils/metrics.py -> build/lib/object_detection/utils
copying object_detection/utils/patch_ops_test.py -> build/lib/object_detection/utils
copying object_detection/utils/static_shape_test.py -> build/lib/object_detection/utils
copying object_detection/utils/per_image_vrd_evaluation_test.py ->
build/lib/object_detection/utils
creating build/lib/object_detection/box_coders
copying object_detection/box_coders/mean_stddev_box_coder.py ->
build/lib/object_detection/box_coders
copying object_detection/box_coders/faster_rcnn_box_coder_test.py ->
build/lib/object_detection/box_coders
copying object_detection/box_coders/keypoint_box_coder.py -> build/lib/object_detection/box_coders
copying object_detection/box_coders/square_box_coder.py -> build/lib/object_detection/box_coders
copying object_detection/box_coders/keypoint_box_coder_test.py ->
build/lib/object_detection/box_coders
copying object_detection/box_coders/mean_stddev_box_coder_test.py ->
build/lib/object_detection/box_coders
copying object_detection/box_coders/_init_.py -> build/lib/object_detection/box_coders
copying object_detection/box_coders/square_box_coder_test.py ->
build/lib/object_detection/box_coders
copying object_detection/box_coders/faster_rcnn_box_coder.py ->
build/lib/object_detection/box_coders
creating build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/center_net_meta_arch.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/faster_rcnn_meta_arch.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/context_rcnn_meta_arch_test.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/context_rcnn_lib.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/ssd_meta_arch.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/context_rcnn_lib_tf2_test.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/ssd_meta_arch_test_lib.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/faster_rcnn_meta_arch_test.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/faster_rcnn_meta_arch_test_lib.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/context_rcnn_meta_arch.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/rfcn_meta_arch_test.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/center_net_meta_arch_tf2_test.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/context_rcnn_lib_tf2.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/context_rcnn_lib_tf1_test.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/ssd_meta_arch_test.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/_init_.py ->
build/lib/object_detection/meta_architectures
copying object_detection/meta_architectures/rfcn_meta_arch.py ->
build/lib/object_detection/meta_architectures
creating build/lib/object_detection/core
copying object_detection/core/batch_multiclass_nms_test.py -> build/lib/object_detection/core
copying object_detection/core/box_list_test.py -> build/lib/object_detection/core
copying object_detection/core/batcher_tf1_test.py -> build/lib/object_detection/core
copying object_detection/core/matcher_test.py -> build/lib/object_detection/core
copying object_detection/core/data_decoder.py -> build/lib/object_detection/core
copying object_detection/core/box_list_ops.py -> build/lib/object_detection/core
copying object_detection/core/target_assigner.py -> build/lib/object_detection/core
copying object_detection/core/freezable_batch_norm.py -> build/lib/object_detection/core
copying object_detection/core/post_processing.py -> build/lib/object_detection/core
copying object_detection/core/densepose_ops.py -> build/lib/object_detection/core
copying object_detection/core/matcher.py -> build/lib/object_detection/core
copying object_detection/core/box_list.py -> build/lib/object_detection/core
copying object_detection/core/standard_fields.py -> build/lib/object_detection/core
copying object_detection/core/balanced_positive_negative_sampler.py ->
build/lib/object_detection/core
copying object_detection/core/keypoint_ops_test.py -> build/lib/object_detection/core
copying object_detection/core/losses_test.py -> build/lib/object_detection/core
copying object_detection/core/data_parser.py -> build/lib/object_detection/core
copying object_detection/core/prefetcher.py -> build/lib/object_detection/core
```

```
copying object_detection/core/keypoint_ops.py -> build/lib/object_detection/core
copying object_detection/core/minibatch_sampler.py -> build/lib/object_detection/core
copying object_detection/core/box_coder.py -> build/lib/object_detection/core
copying object_detection/core/minibatch_sampler_test.py -> build/lib/object_detection/core
copying object_detection/core/preprocessor_cache.py -> build/lib/object_detection/core
copying object_detection/core/batcher.py -> build/lib/object_detection/core
copying object_detection/core/balanced_positive_negative_sampler_test.py ->
build/lib/object_detection/core
copying object_detection/core/region_similarity_calculator_test.py ->
build/lib/object_detection/core
copying object_detection/core/target_assigner_test.py -> build/lib/object_detection/core
copying object_detection/core/box_list_ops_test.py -> build/lib/object_detection/core
copying object_detection/core/preprocessor.py -> build/lib/object_detection/core
copying object_detection/core/anchor_generator.py -> build/lib/object_detection/core
copying object_detection/core/box_predictor.py -> build/lib/object_detection/core
copying object_detection/core/box_coder_test.py -> build/lib/object_detection/core
copying object_detection/core/region_similarity_calculator.py -> build/lib/object_detection/core
copying object_detection/core/prefetcher_tf1_test.py -> build/lib/object_detection/core
copying object_detection/core/densepose_ops_test.py -> build/lib/object_detection/core
copying object_detection/core/multiclass_nms_test.py -> build/lib/object_detection/core
copying object_detection/core/model.py -> build/lib/object_detection/core
copying object_detection/core/freezable_batch_norm_tf2_test.py -> build/lib/object_detection/core
copying object_detection/core/class_agnostic_nms_test.py -> build/lib/object_detection/core
copying object_detection/core/losses.py -> build/lib/object_detection/core
copying object_detection/core/model_test.py -> build/lib/object_detection/core
copying object_detection/core/_init_.py -> build/lib/object_detection/core
copying object_detection/core/preprocessor_test.py -> build/lib/object_detection/core
creating build/lib/object_detection/metrics
copying object_detection/metrics/coco_evaluation_test.py -> build/lib/object_detection/metrics
copying object_detection/metrics/io_utils.py -> build/lib/object_detection/metrics
copying object_detection/metrics/oid_vrd_challenge_evaluation_utils_test.py ->
build/lib/object_detection/metrics
copying object_detection/metrics/oid_vrd_challenge_evaluation_utils.py ->
build/lib/object_detection/metrics
copying object_detection/metrics/oid_vrd_challenge_evaluation.py ->
build/lib/object_detection/metrics
copying object_detection/metrics/lvis_tools_test.py -> build/lib/object_detection/metrics
copying object_detection/metrics/coco_evaluation.py -> build/lib/object_detection/metrics
copying object_detection/metrics/lvis_evaluation.py -> build/lib/object_detection/metrics
copying object_detection/metrics/oid_challenge_evaluation_utils_test.py ->
build/lib/object_detection/metrics
copying object_detection/metrics/coco_tools_test.py -> build/lib/object_detection/metrics
copying object_detection/metrics/coco_tools.py -> build/lib/object_detection/metrics
copying object_detection/metrics/lvis_evaluation_test.py -> build/lib/object_detection/metrics
copying object_detection/metrics/calibration_metrics.py -> build/lib/object_detection/metrics
copying object_detection/metrics/calibration_evaluation_tf1_test.py ->
build/lib/object_detection/metrics
copying object_detection/metrics/coco_tools.py -> build/lib/object_detection/metrics
copying object_detection/metrics/lvis_evaluation.py -> build/lib/object_detection/metrics
copying object_detection/metrics/tf_example_parser.py -> build/lib/object_detection/metrics
copying object_detection/metrics/lvis_tools.py -> build/lib/object_detection/metrics
copying object_detection/metrics/oid_challenge_evaluation.py -> build/lib/object_detection/metrics
copying object_detection/metrics/calibration_metrics_tf1_test.py ->
build/lib/object_detection/metrics
copying object_detection/metrics/oid_challenge_evaluation_utils.py ->
build/lib/object_detection/metrics
copying object_detection/metrics/_init_.py -> build/lib/object_detection/metrics
copying object_detection/metrics/tf_example_parser_test.py -> build/lib/object_detection/metrics
creating build/lib/object_detection/data_decoders
copying object_detection/data_decoders/tf_sequence_example_decoder.py ->
build/lib/object_detection/data_decoders
copying object_detection/data_decoders/tf_example_decoder_test.py ->
build/lib/object_detection/data_decoders
copying object_detection/data_decoders/tf_example_decoder.py ->
build/lib/object_detection/data_decoders
copying object_detection/data_decoders/tf_sequence_example_decoder_test.py ->
build/lib/object_detection/data_decoders
copying object_detection/data_decoders/_init_.py -> build/lib/object_detection/data_decoders
creating build/lib/object_detection/predictors
copying object_detection/predictors/rfcn_keras_box_predictor.py ->
build/lib/object_detection/predictors
copying object_detection/predictors/rfcn_keras_box_predictor_tf2_test.py ->
build/lib/object_detection/predictors
copying object_detection/predictors/convolutional_keras_box_predictor_tf2_test.py ->
build/lib/object_detection/predictors
```

```
copying object_detection/predictors/convolutional_keras_box_predictor.py ->
build/lib/object_detection/predictors
copying object_detection/predictors/mask_rcnn_keras_box_predictor_tf2_test.py ->
build/lib/object_detection/predictors
copying object_detection/predictors/mask_rcnn_box_predictor.py ->
build/lib/object_detection/predictors
copying object_detection/predictors/mask_rcnn_box_predictor_tf1_test.py ->
build/lib/object_detection/predictors
copying object_detection/predictors/rfcn_box_predictor.py -> build/lib/object_detection/predictors
copying object_detection/predictors/rfcn_box_predictor_tf1_test.py ->
build/lib/object_detection/predictors
copying object_detection/predictors/convolutional_box_predictor.py ->
build/lib/object_detection/predictors
copying object_detection/predictors/mask_rcnn_keras_box_predictor.py ->
build/lib/object_detection/predictors
copying object_detection/predictors/__init__.py -> build/lib/object_detection/predictors
copying object_detection/predictors/convolutional_box_predictor_tf1_test.py ->
build/lib/object_detection/predictors
creating build/lib/object_detection/dataset_tools/context_rcnn
copying object_detection/dataset_tools/context_rcnn/create_cococameratraps_tfexample_tf2_test.py -> build/lib/object_detection/dataset_tools/context_rcnn
copying object_detection/dataset_tools/context_rcnn/add_context_to_examples.py -> build/lib/object_detection/dataset_tools/context_rcnn
copying object_detection/dataset_tools/context_rcnn/create_cococameratraps_tfexample_main.py -> build/lib/object_detection/dataset_tools/context_rcnn
copying object_detection/dataset_tools/context_rcnn/generate_embedding_data.py -> build/lib/object_detection/dataset_tools/context_rcnn
copying object_detection/dataset_tools/context_rcnn/generate_embedding_data_tf2_test.py -> build/lib/object_detection/dataset_tools/context_rcnn
copying object_detection/dataset_tools/context_rcnn/add_context_to_examples_tf2_test.py -> build/lib/object_detection/dataset_tools/context_rcnn
copying object_detection/dataset_tools/context_rcnn/generate_detection_data.py -> build/lib/object_detection/dataset_tools/context_rcnn
copying object_detection/dataset_tools/context_rcnn/generate_detection_data_tf2_test.py -> build/lib/object_detection/dataset_tools/context_rcnn
copying object_detection/dataset_tools/context_rcnn/__init__.py -> build/lib/object_detection/dataset_tools/context_rcnn
creating build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/inception_resnet_v2.py -> build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/mobilenet_v2_tf2_test.py -> build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/mobilenet_v2.py -> build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/resnet_v1.py -> build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/resnet_v1_tf2_test.py -> build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/model_utils.py -> build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/test_utils.py -> build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/mobilenet_v1_tf2_test.py -> build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/hourglass_network_tf2_test.py -> build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/hourglass_network.py -> build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/convert_keras_models.py -> build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/inception_resnet_v2_tf2_test.py -> build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/mobilenet_v1.py -> build/lib/object_detection/models/keras_models
copying object_detection/models/keras_models/__init__.py -> build/lib/object_detection/models/keras_models
creating build/lib/object_detection/tpu_exporters/testdata
copying object_detection/tpu_exporters/testdata/__init__.py -> build/lib/object_detection/tpu_exporters/testdata
creating build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/head.py -> build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/keras_box_head_tf2_test.py -> build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/keras_class_head.py -> build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/box_head_tf1_test.py -> build/lib/object_detection/predictors/heads
```

```
running build_ext
copying object_detection/predictors/heads/box_head.py ->
build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/keras_class_head_tf2_test.py ->
build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/class_head.py ->
build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/keypoint_head.py ->
build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/keras_box_head.py ->
build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/mask_head.py ->
build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/class_head_tf1_test.py ->
build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/keypoint_head_tf1_test.py ->
build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/mask_head_tf1_test.py ->
build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/keras_mask_head.py ->
build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/keras_mask_head_tf2_test.py ->
build/lib/object_detection/predictors/heads
copying object_detection/predictors/heads/__init__.py ->
build/lib/object_detection/predictors/heads
running egg_info
creating object_detection.egg-info
writing object_detection.egg-info/PKG-INFO
writing dependency_links to object_detection.egg-info/dependency_links.txt
writing requirements to object_detection.egg-info/requirements.txt
writing top-level names to object_detection.egg-info/top_level.txt
writing manifest file 'object_detection.egg-info/SOURCES.txt'
writing manifest file 'object_detection.egg-info/SOURCES.txt'
copying object_detection/CONTRIBUTING.md -> build/lib/object_detection
copying object_detection/README.md -> build/lib/object_detection
creating build/lib/object_detection/colab_tutorials
copying object_detection/colab_tutorials/context_rcnnTutorial.ipynb ->
build/lib/object_detection/colab_tutorials
copying object_detection/colab_tutorials/eager_few_shot_od_training_tf2_colab.ipynb ->
build/lib/object_detection/colab_tutorials
copying object_detection/colab_tutorials/eager_few_shot_od_training_tflite.ipynb ->
build/lib/object_detection/colab_tutorials
copying object_detection/colab_tutorials/inference_from_saved_model_tf2_colab.ipynb ->
build/lib/object_detection/colab_tutorials
copying object_detection/colab_tutorials/inference_tf2_colab.ipynb ->
build/lib/object_detection/colab_tutorials
copying object_detection/colab_tutorials/object_detectionTutorial.ipynb ->
build/lib/object_detection/colab_tutorials
creating build/lib/object_detection/configs
creating build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/centernet_hourglass104_1024x1024_coco17_tpu-32.config -> build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/centernet_hourglass104_1024x1024_kpts_coco17_tpu-32.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/centernet_hourglass104_512x512_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/centernet_hourglass104_512x512_kpts_coco17_tpu-32.config -> build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/centernet_resnet101_v1_fpn_512x512_coco17_tpu-8.config -> build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/centernet_resnet50_v1_fpn_512x512_kpts_coco17_tpu-8.config -> build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/centernet_resnet50_v2_512x512_kpts_coco17_tpu-8.config -> build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/faster_rcnn_resnet101_v1_1024x1024_coco17_tpu-8.config -> build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/faster_rcnn_resnet101_v1_640x640_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/faster_rcnn_resnet101_v1_800x1333_coco17_gpu-8.config -> build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/faster_rcnn_resnet152_v1_1024x1024_coco17_tpu-8.config -> build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/faster_rcnn_resnet152_v1_640x640_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/faster_rcnn_resnet152_v1_800x1333_coco17_gpu-8.config -> build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/faster_rcnn_resnet50_v1_1024x1024_coco17_tpu-8.config -> build/lib/object_detection/configs/tf2
```

```
build/115/object_detection/configs/cfg
copying object_detection/configs/tf2/faster_rcnn_resnet50_v1_640x640_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/faster_rcnn_resnet50_v1_800x1333_coco17_gpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/faster_rcnn_resnet50_v1_fpn_640x640_coco17_tpu-8.config -> bu
ild/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/mask_rcnn_inception_resnet_v2_1024x1024_coco17_gpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_efficientdet_d0_512x512_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_efficientdet_d1_640x640_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_efficientdet_d2_768x768_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_efficientdet_d3_896x896_coco17_tpu-32.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_efficientdet_d4_1024x1024_coco17_tpu-32.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_efficientdet_d5_1280x1280_coco17_tpu-32.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_efficientdet_d6_1408x1408_coco17_tpu-32.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_efficientdet_d7_1536x1536_coco17_tpu-32.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_mobilenet_v1_fpn_640x640_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_mobilenet_v2_320x320_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_mobilenet_v2_fpnlite_320x320_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_mobilenet_v2_fpnlite_640x640_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_resnet101_v1_fpn_1024x1024_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_resnet101_v1_fpn_640x640_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_resnet152_v1_fpn_1024x1024_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_resnet152_v1_fpn_640x640_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_resnet50_v1_fpn_1024x1024_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
copying object_detection/configs/tf2/ssd_resnet50_v1_fpn_640x640_coco17_tpu-8.config ->
build/lib/object_detection/configs/tf2
creating build/lib/object_detection/data
copying object_detection/data/ava_label_map_v2.1.pbtxt -> build/lib/object_detection/data
copying object_detection/data/face_label_map.pbtxt -> build/lib/object_detection/data
copying object_detection/data/face_person_with_keypoints_label_map.pbtxt ->
build/lib/object_detection/data
copying object_detection/data/fgvc_2854_classes_label_map.pbtxt -> build/lib/object_detection/data
copying object_detection/data/kitti_label_map.pbtxt -> build/lib/object_detection/data
copying object_detection/data/mscoco_complete_label_map.pbtxt -> build/lib/object_detection/data
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copying object_detection/data/oid_bbox_trainable_label_map.pbtxt ->
build/lib/object_detection/data
copying object_detection/data/oid_object_detection_challenge_500_label_map.pbtxt ->
build/lib/object_detection/data
copying object_detection/data/oid_v4_label_map.pbtxt -> build/lib/object_detection/data
copying object_detection/data/pascal_label_map.pbtxt -> build/lib/object_detection/data
copying object_detection/data/pet_label_map.pbtxt -> build/lib/object_detection/data
copying object_detection/data/snapshot_serengeti_label_map.pbtxt ->
build/lib/object_detection/data
creating build/lib/object_detection/dockerfiles
creating build/lib/object_detection/dockerfiles/android
copying object_detection/dockerfiles/android/Dockerfile ->
build/lib/object_detection/dockerfiles/android
copying object_detection/dockerfiles/android/README.md ->
build/lib/object_detection/dockerfiles/android
creating build/lib/object_detection/dockerfiles/tf1
copying object_detection/dockerfiles/tf1/Dockerfile -> build/lib/object_detection/dockerfiles/tf1
copying object_detection/dockerfiles/tf1/README.md -> build/lib/object_detection/dockerfiles/tf1
creating build/lib/object_detection/dockerfiles/tf2
copying object_detection/dockerfiles/tf2/Dockerfile -> build/lib/object_detection/dockerfiles/tf2
copying object_detection/dockerfiles/tf2/README.md -> build/lib/object_detection/dockerfiles/tf2
creating build/lib/object_detection/g3doc
copying object_detection/g3doc/challenge_evaluation.md -> build/lib/object_detection/g3doc
```

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copying object_detection/g3doc/challenge_evaluation.md -> build/lib/object_detection/g3doc
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copying object_detection/g3doc/context_rcnn.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/defining_your_own_model.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/evaluation_protocols.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/exporting_models.md -> build/lib/object_detection/g3doc
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copying object_detection/g3doc/oid_inference_and_evaluation.md -> build/lib/object_detection/g3doc
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copying object_detection/g3doc/release_notes.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/running_notebook.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/running_on_mobile_tensorflowlite.md ->
build/lib/object_detection/g3doc
copying object_detection/g3doc/running_on_mobile_tf2.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/running_pets.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/tf1.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/tf1_detection_zoo.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/tf1_training_and_evaluation.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/tf2.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/tf2_classification_zoo.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/tf2_detection_zoo.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/tf2_training_and_evaluation.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/tpu_compatibility.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/tpu_exporters.md -> build/lib/object_detection/g3doc
copying object_detection/g3doc/using_your_own_dataset.md -> build/lib/object_detection/g3doc
creating build/lib/object_detection/g3doc/img
copying object_detection/g3doc/img/dogs_detections_output.jpg ->
build/lib/object_detection/g3doc/img
copying object_detection/g3doc/img/example_cat.jpg -> build/lib/object_detection/g3doc/img
copying object_detection/g3doc/img/groupof_case_eval.png -> build/lib/object_detection/g3doc/img
copying object_detection/g3doc/img/kites_detections_output.jpg ->
build/lib/object_detection/g3doc/img
copying object_detection/g3doc/img/kites_with_segment_overlay.png ->
build/lib/object_detection/g3doc/img
copying object_detection/g3doc/img/nongroupof_case_eval.png ->
build/lib/object_detection/g3doc/img
copying object_detection/g3doc/img/oid_bus_72e19c28aac34ed8.jpg ->
build/lib/object_detection/g3doc/img
copying object_detection/g3doc/img/oid_monkey_3b4168c89cecbc5b.jpg ->
build/lib/object_detection/g3doc/img
copying object_detection/g3doc/img/oxford_pet.png -> build/lib/object_detection/g3doc/img
copying object_detection/g3doc/img/tensorboard.png -> build/lib/object_detection/g3doc/img
copying object_detection/g3doc/img/tensorboard2.png -> build/lib/object_detection/g3doc/img
copying object_detection/g3doc/img/tf-od-api-logo.png -> build/lib/object_detection/g3doc/img
creating build/lib/object_detection/packages
creating build/lib/object_detection/packages/tf1
copying object_detection/packages/tf1/setup.py -> build/lib/object_detection/packages/tf1
creating build/lib/object_detection/packages/tf2
copying object_detection/packages/tf2/setup.py -> build/lib/object_detection/packages/tf2
creating build/lib/object_detection/samples
creating build/lib/object_detection/samples/cloud
copying object_detection/samples/cloud/cloud.yml -> build/lib/object_detection/samples/cloud
creating build/lib/object_detection/samples/configs
copying object_detection/samples/configs/context_rcnn_resnet101_snapshot_serengeti.config ->
build/lib/object_detection/samples/configs
copying object_detection/samples/configs/context_rcnn_resnet101_snapshot_serengeti_sync.config ->
build/lib/object_detection/samples/configs
copying object_detection/samples/configs/embedded_ssd_mobilenet_v1_coco.config ->
build/lib/object_detection/samples/configs
copying
object_detection/samples/configs/facessd_mobilenet_v2_quantized_320x320_open_image_v4.config -> bu
ild/lib/object_detection/samples/configs
copying object_detection/samples/configs/faster_rcnn_inception_resnet_v2_atrous_coco.config -> bui
ld/lib/object_detection/samples/configs
copying
object_detection/samples/configs/faster_rcnn_inception_resnet_v2_atrous_lr_coco.config -> b
uild/lib/object_detection/samples/configs
copying object_detection/samples/configs/faster_rcnn_inception_resnet_v2_atrous_oid.config ->
build/lib/object_detection/samples/configs
copying object_detection/samples/configs/faster_rcnn_inception_resnet_v2_atrous_oid_v4.config -> b
uild/lib/object_detection/samples/configs
copying object_detection/samples/configs/faster_rcnn_inception_resnet_v2_atrous_pets.config -> bui
ld/lib/object_detection/samples/configs
copying object_detection/samples/configs/faster_rcnn_inception_v2_coco.config ->
build/lib/object_detection/samples/configs
copying object_detection/samples/configs/faster_rcnn_inception_v2_pets.config ->
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copying object_detection/samples/configs/faster_rcnn_inception_v2_pets.config ->
build/lib/object_detection/samples/configs
copying object_detection/samples/configs/faster_rcnn_inception_v2_pets.config ->
```



```
utilizer_1c_coco14_sync.config -> build/lib/object_detection/samples/configs
copying object_detection/samples/configs/ssd_mobilenet_v2_fullyconv_coco.config ->
build/lib/object_detection/samples/configs
copying
object_detection/samples/configs/ssd_mobilenet_v2_mnasfpn_shared_box_predictor_320x320_coco_sync.cc
-> build/lib/object_detection/samples/configs
copying object_detection/samples/configs/ssd_mobilenet_v2_oid_v4.config ->
build/lib/object_detection/samples/configs
copying object_detection/samples/configs/ssd_mobilenet_v2_pets_keras.config ->
build/lib/object_detection/samples/configs
copying object_detection/samples/configs/ssd_mobilenet_v2_quantized_300x300_coco.config ->
build/lib/object_detection/samples/configs
copying
object_detection/samples/configs/ssd_resnet101_v1_fpn_shared_box_predictor_oid_512x512_sync.config
-> build/lib/object_detection/samples/configs
copying
object_detection/samples/configs/ssd_resnet50_v1_fpn_shared_box_predictor_640x640_coco14_sync.config
-> build/lib/object_detection/samples/configs
copying object_detection/samples/configs/ssdlite_mobiledet_cpu_320x320_coco_sync_4x4.config -> bui
ld/lib/object_detection/samples/configs
copying object_detection/samples/configs/ssdlite_mobiledet_dsp_320x320_coco_sync_4x4.config -> bui
ld/lib/object_detection/samples/configs
copying object_detection/samples/configs/ssdlite_mobiledet_edgetpu_320x320_coco_sync_4x4.config ->
build/lib/object_detection/samples/configs
copying object_detection/samples/configs/ssdlite_mobiledet_gpu_320x320_coco_sync_4x4.config -> bui
ld/lib/object_detection/samples/configs
copying object_detection/samples/configs/ssdlite_mobilenet_edgetpu_320x320_coco.config ->
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copying object_detection/samples/configs/ssdlite_mobilenet_edgetpu_320x320_coco_quant.config -> bu
ild/lib/object_detection/samples/configs
copying object_detection/samples/configs/ssdlite_mobilenet_v1_coco.config ->
build/lib/object_detection/samples/configs
copying object_detection/samples/configs/ssdlite_mobilenet_v2_coco.config ->
build/lib/object_detection/samples/configs
copying object_detection/samples/configs/ssdlite_mobilenet_v3_large_320x320_coco.config ->
build/lib/object_detection/samples/configs
copying object_detection/samples/configs/ssdlite_mobilenet_v3_small_320x320_coco.config ->
build/lib/object_detection/samples/configs
creating build/lib/object_detection/test_data
copying object_detection/test_data/context_rcnn_camera_trap.config ->
build/lib/object_detection/test_data
copying object_detection/test_data/pets_examples.record -> build/lib/object_detection/test_data
copying object_detection/test_data/snapshot_serengeti_sequence_examples.record ->
build/lib/object_detection/test_data
copying object_detection/test_data/ssd_mobilenet_v1_fpp.config ->
build/lib/object_detection/test_data
creating build/lib/object_detection/test_images
copying object_detection/test_images/image1.jpg -> build/lib/object_detection/test_images
copying object_detection/test_images/image2.jpg -> build/lib/object_detection/test_images
copying object_detection/test_images/image_info.txt -> build/lib/object_detection/test_images
creating build/lib/object_detection/test_images/ducky
creating build/lib/object_detection/test_images/ducky/test
copying object_detection/test_images/ducky/test/out1.jpg ->
build/lib/object_detection/test_images/ducky/test
copying object_detection/test_images/ducky/test/out10.jpg ->
build/lib/object_detection/test_images/ducky/test
copying object_detection/test_images/ducky/test/out11.jpg ->
build/lib/object_detection/test_images/ducky/test
copying object_detection/test_images/ducky/test/out12.jpg ->
build/lib/object_detection/test_images/ducky/test
copying object_detection/test_images/ducky/test/out13.jpg ->
build/lib/object_detection/test_images/ducky/test
copying object_detection/test_images/ducky/test/out14.jpg ->
build/lib/object_detection/test_images/ducky/test
copying object_detection/test_images/ducky/test/out15.jpg ->
build/lib/object_detection/test_images/ducky/test
copying object_detection/test_images/ducky/test/out16.jpg ->
build/lib/object_detection/test_images/ducky/test
copying object_detection/test_images/ducky/test/out17.jpg ->
build/lib/object_detection/test_images/ducky/test
copying object_detection/test_images/ducky/test/out18.jpg ->
build/lib/object_detection/test_images/ducky/test
copying object_detection/test_images/ducky/test/out19.jpg ->
build/lib/object_detection/test_images/ducky/test
copying object_detection/test_images/ducky/test/out2.jpg ->
build/lib/object_detection/test_images/ducky/test
copying object_detection/test_images/ducky/test/out20.jpg ->
```



```
build/lib/object_detection/test_images/ducky/train
copying object_detection/test_images/ducky/train/robertducky3.jpg ->
build/lib/object_detection/test_images/ducky/train
copying object_detection/test_images/ducky/train/robertducky4.jpg ->
build/lib/object_detection/test_images/ducky/train
copying object_detection/test_images/ducky/train/robertducky5.jpg ->
build/lib/object_detection/test_images/ducky/train
creating build/lib/object_detection/test_images/snapshot_serengeti
copying object_detection/test_images/snapshot_serengeti/README.md ->
build/lib/object_detection/test_images/snapshot_serengeti
copying object_detection/test_images/snapshot_serengeti/S1_E03_R3_PICT0038.jpeg ->
build/lib/object_detection/test_images/snapshot_serengeti
copying object_detection/test_images/snapshot_serengeti/S1_E03_R3_PICT0039.jpeg ->
build/lib/object_detection/test_images/snapshot_serengeti
copying object_detection/test_images/snapshot_serengeti/S1_E03_R3_PICT0040.jpeg ->
build/lib/object_detection/test_images/snapshot_serengeti
copying object_detection/test_images/snapshot_serengeti/S1_E03_R3_PICT0041.jpeg ->
build/lib/object_detection/test_images/snapshot_serengeti
copying object_detection/test_images/snapshot_serengeti/context_rcnn_demo_metadata.json ->
build/lib/object_detection/test_images/snapshot_serengeti
copying object_detection/dataset_tools/create_pycocotools_package.sh ->
build/lib/object_detection/dataset_tools
copying object_detection/dataset_tools/download_and_preprocess_ava.sh ->
build/lib/object_detection/dataset_tools
copying object_detection/dataset_tools/download_and_preprocess_mscoco.sh ->
build/lib/object_detection/dataset_tools
creating build/lib/object_detection/dataset_tools/densepose
copying object_detection/dataset_tools/densepose/UV_symmetry_transforms.mat ->
build/lib/object_detection/dataset_tools/densepose
copying object_detection/protos/anchor_generator.proto -> build/lib/object_detection/protos
copying object_detection/protos/argmax_matcher.proto -> build/lib/object_detection/protos
copying object_detection/protos/bipartite_matcher.proto -> build/lib/object_detection/protos
copying object_detection/protos/box_coder.proto -> build/lib/object_detection/protos
copying object_detection/protos/box_predictor.proto -> build/lib/object_detection/protos
copying object_detection/protos/calibration.proto -> build/lib/object_detection/protos
copying object_detection/protos/center_net.proto -> build/lib/object_detection/protos
copying object_detection/protos/eval.proto -> build/lib/object_detection/protos
copying object_detection/protos/faster_rcnn.proto -> build/lib/object_detection/protos
copying object_detection/protos/faster_rcnn_box_coder.proto -> build/lib/object_detection/protos
copying object_detection/protos/flexible_grid_anchor_generator.proto ->
build/lib/object_detection/protos
copying object_detection/protos/fpn.proto -> build/lib/object_detection/protos
copying object_detection/protos/graph_rewriter.proto -> build/lib/object_detection/protos
copying object_detection/protos/grid_anchor_generator.proto -> build/lib/object_detection/protos
copying object_detection/protos/hyperparams.proto -> build/lib/object_detection/protos
copying object_detection/protos/image_resizer.proto -> build/lib/object_detection/protos
copying object_detection/protos/input_reader.proto -> build/lib/object_detection/protos
copying object_detection/protos/keypoint_box_coder.proto -> build/lib/object_detection/protos
copying object_detection/protos/losses.proto -> build/lib/object_detection/protos
copying object_detection/protos/matcher.proto -> build/lib/object_detection/protos
copying object_detection/protos/mean_stddev_box_coder.proto -> build/lib/object_detection/protos
copying object_detection/protos/model.proto -> build/lib/object_detection/protos
copying object_detection/protos/multiscale_anchor_generator.proto ->
build/lib/object_detection/protos
copying object_detection/protos/optimizer.proto -> build/lib/object_detection/protos
copying object_detection/protos/pipeline.proto -> build/lib/object_detection/protos
copying object_detection/protos/post_processing.proto -> build/lib/object_detection/protos
copying object_detection/protos/preprocessor.proto -> build/lib/object_detection/protos
copying object_detection/protos/region_similarity_calculator.proto ->
build/lib/object_detection/protos
copying object_detection/protos/square_box_coder.proto -> build/lib/object_detection/protos
copying object_detection/protos/ssd.proto -> build/lib/object_detection/protos
copying object_detection/protos/ssd_anchor_generator.proto -> build/lib/object_detection/protos
copying object_detection/protos/string_int_label_map.proto -> build/lib/object_detection/protos
copying object_detection/protos/target_assigner.proto -> build/lib/object_detection/protos
copying object_detection/protos/train.proto -> build/lib/object_detection/protos
creating build/lib/object_detection/models/keras_models/base_models
copying object_detection/models/keras_models/base_models/original_mobilenet_v2.py ->
build/lib/object_detection/models/keras_models/base_models
creating build/lib/object_detection/tpu_exporters/testdata/faster_rcnn
copying
object_detection/tpu_exporters/testdata/faster_rcnn/faster_rcnn_resnet101_atrous_coco.config -> bu
ild/lib/object_detection/tpu_exporters/testdata/faster_rcnn
creating build/lib/object_detection/tpu_exporters/testdata/ssd
copying object_detection/tpu_exporters/testdata/ssd/ssd_pipeline.config ->
build/lib/object_detection/tpu_exporters/testdata/ssd
running install
```

```
running bdist_egg
running egg_info
writing object_detection.egg-info/PKG-INFO
writing dependency_links to object_detection.egg-info/dependency_links.txt
writing requirements to object_detection.egg-info/requirements.txt
writing top-level names to object_detection.egg-info/top_level.txt
writing manifest file 'object_detection.egg-info/SOURCES.txt'
installing library code to build/bdist.linux-x86_64/egg
running install_lib
running build_py
creating build/bdist.linux-x86_64
creating build/bdist.linux-x86_64/egg
creating build/bdist.linux-x86_64/egg/object_detection
creating build/bdist.linux-x86_64/egg/object_detection/test_images
copying build/lib/object_detection/test_images/image_info.txt -> build/bdist.linux-x86_64/egg/object_detection/test_images
creating build/bdist.linux-x86_64/egg/object_detection/test_images/snapshot_serengeti
copying build/lib/object_detection/test_images/snapshot_serengeti/S1_E03_R3_PICT0039.jpeg -> build/bdist.linux-x86_64/egg/object_detection/test_images/snapshot_serengeti
copying build/lib/object_detection/test_images/snapshot_serengeti/context_rcnn_demo_metadata.json -> build/bdist.linux-x86_64/egg/object_detection/test_images/snapshot_serengeti
copying build/lib/object_detection/test_images/snapshot_serengeti/S1_E03_R3_PICT0040.jpeg -> build/bdist.linux-x86_64/egg/object_detection/test_images/snapshot_serengeti
copying build/lib/object_detection/test_images/snapshot_serengeti/README.md -> build/bdist.linux-x86_64/egg/object_detection/test_images/snapshot_serengeti
copying build/lib/object_detection/test_images/snapshot_serengeti/S1_E03_R3_PICT0038.jpeg -> build/bdist.linux-x86_64/egg/object_detection/test_images/snapshot_serengeti
copying build/lib/object_detection/test_images/snapshot_serengeti/S1_E03_R3_PICT0041.jpeg -> build/bdist.linux-x86_64/egg/object_detection/test_images/snapshot_serengeti
copying build/lib/object_detection/test_images/image2.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images
copying build/lib/object_detection/test_images/image1.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images
creating build/bdist.linux-x86_64/egg/object_detection/test_images/ducky
creating build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out23.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out30.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out3.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out16.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out46.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out21.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out49.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out5.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out2.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out45.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out1.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out10.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out6.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out37.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out26.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out36.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out9.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out20.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out25.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out47.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
copying build/lib/object_detection/test_images/ducky/test/out12.jpg -> build/bdist.linux-x86_64/egg/object_detection/test_images/ducky/test
```



```
copying build/lib/object_detection/dataset_tools/create_kitti_tf_record_test.py ->
build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/oid_hierarchical_labels_expansion_test.py ->
build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/create_coco_tf_record_test.py ->
build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/seq_example_util_test.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/create_oid_tf_record.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/tf_record_creation_util_test.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/create_coco_tf_record.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/create_pet_tf_record.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/oid_tfrecord_creation.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/tf_record_creation_util.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/create_kitti_tf_record.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/create_pascal_tf_record_test.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/download_and_preprocess_ava.sh -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/create_pycocotools_package.sh -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/seq_example_util.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/create_ava_actions_tf_record.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
creating build/bdist.linux-x86_64/egg/object_detection/dataset_tools/context_rcnn
copying
build/lib/object_detection/dataset_tools/context_rcnn/create_cococameratraps_tfexample_tf2_test.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools/context_rcnn
copying build/lib/object_detection/dataset_tools/context_rcnn/add_context_to_examples.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools/context_rcnn
copying
build/lib/object_detection/dataset_tools/context_rcnn/create_cococameratraps_tfexample_main.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools/context_rcnn
copying build/lib/object_detection/dataset_tools/context_rcnn/generate_embedding_data.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools/context_rcnn
copying build/lib/object_detection/dataset_tools/context_rcnn/generate_embedding_data_tf2_test.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools/context_rcnn
copying build/lib/object_detection/dataset_tools/context_rcnn/add_context_to_tf2_test.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools/context_rcnn
copying build/lib/object_detection/dataset_tools/context_rcnn/generate_detection_data.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools/context_rcnn
copying build/lib/object_detection/dataset_tools/context_rcnn/generate_detection_tf2_test.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools/context_rcnn
copying build/lib/object_detection/dataset_tools/context_rcnn/_init__.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools/context_rcnn
copying build/lib/object_detection/dataset_tools/create_pascal_tf_record.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/oid_tfrecord_creation_test.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/dataset_tools/__init__.py -> build/bdist.linux-x86_64/egg/object_detection/dataset_tools
copying build/lib/object_detection/export_tflite_ssd_graph_lib_tf1_test.py -> build/bdist.linux-x86_64/egg/object_detection
copying build/lib/object_detection/exporter_main_v2.py -> build/bdist.linux-x86_64/egg/object_detection
copying build/lib/object_detection/model_lib.py -> build/bdist.linux-x86_64/egg/object_detection
copying build/lib/object_detection/model_main_tf2.py -> build/bdist.linux-x86_64/egg/object_detection
creating build/bdist.linux-x86_64/egg/object_detection/inference
copying build/lib/object_detection/inference/infer_detections.py -> build/bdist.linux-x86_64/egg/object_detection/inference
copying build/lib/object_detection/inference/detection_inference_tf1_test.py -> build/bdist.linux-x86_64/egg/object_detection/inference
copying build/lib/object_detection/inference/detection_inference.py -> build/bdist.linux-x86_64/egg/object_detection/inference
copying build/lib/object_detection/inference/__init__.py -> build/bdist.linux-x86_64/egg/object_detection/inference
creating build/bdist.linux-x86_64/egg/object_detection/colab_tutorials
copying build/lib/object_detection/colab_tutorials/eager_few_shot_od_training_tflite.ipynb ->
```

```
build/bdist.linux-x86_64/egg/object_detection/colab_tutorials
copying build/lib/object_detection/colab_tutorials/object_detection_tutorial.ipynb ->
build/bdist.linux-x86_64/egg/object_detection/colab_tutorials
copying build/lib/object_detection/colab_tutorials/eager_few_shot_od_training_tf2_colab.ipynb -> b
uild/bdist.linux-x86_64/egg/object_detection/colab_tutorials
copying build/lib/object_detection/colab_tutorials/inference_from_saved_model_tf2_colab.ipynb -> b
uild/bdist.linux-x86_64/egg/object_detection/colab_tutorials
copying build/lib/object_detection/colab_tutorials/context_rcnn_tutorial.ipynb ->
build/bdist.linux-x86_64/egg/object_detection/colab_tutorials
copying build/lib/object_detection/colab_tutorials/inference_tf2_colab.ipynb -> build/bdist.linux-
x86_64/egg/object_detection/colab_tutorials
creating build/bdist.linux-x86_64/egg/object_detection/packages
creating build/bdist.linux-x86_64/egg/object_detection/packages/tf1
copying build/lib/object_detection/packages/tf1/setup.py -> build/bdist.linux-
x86_64/egg/object_detection/packages/tf1
creating build/bdist.linux-x86_64/egg/object_detection/packages/tf2
copying build/lib/object_detection/packages/tf2/setup.py -> build/bdist.linux-
x86_64/egg/object_detection/packages/tf2
copying build/lib/object_detection/exporter.py -> build/bdist.linux-x86_64/egg/object_detection
creating build/bdist.linux-x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/anchor_generator_builder_test.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/optimizer_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/calibration_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/post_processing_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/calibration_builder_test.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/optimizer_builder_tf1_test.py -> build/bdist.linux-x86
_64/egg/object_detection/builders
copying build/lib/object_detection/builders/preprocessor_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/box_coder_builder_test.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/dataset_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/model_builder_tf2_test.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/model_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/box_predictor_builder_test.py -> build/bdist.linux-x86
_64/egg/object_detection/builders
copying build/lib/object_detection/builders/matcher_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/input_reader_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/hyperparams_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/decoder_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/box_predictor_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/dataset_builder_test.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/optimizer_builder_tf2_test.py -> build/bdist.linux-x86
_64/egg/object_detection/builders
copying build/lib/object_detection/builders/graph_rewriter_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/anchor_generator_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/input_reader_builder_tf1_test.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/post_processing_builder_test.py -> build/bdist.linux-x
86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/region_similarity_calculator_builder_test.py ->
build/bdist.linux-x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/image_resizer_builder_test.py -> build/bdist.linux-x86
_64/egg/object_detection/builders
copying build/lib/object_detection/builders/model_builder_test.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/target_assigner_builder_test.py -> build/bdist.linux-x
86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/losses_builder_test.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/hyperparams_builder_test.py -> build/bdist.linux-
```

```
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/box_coder_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/losses_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/preprocessor_builder_test.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/graph_rewriter_builder_tf1_test.py ->
build/bdist.linux-x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/target_assigner_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/image_resizer_builder.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/model_builder_tf1_test.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/decoder_builder_test.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/__init__.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/region_similarity_calculator_builder.py ->
build/bdist.linux-x86_64/egg/object_detection/builders
copying build/lib/object_detection/builders/matcher_builder_test.py -> build/bdist.linux-
x86_64/egg/object_detection/builders
creating build/bdist.linux-x86_64/egg/object_detection/anchor_generators
copying build/lib/object_detection/anchor_generators/multiscale_grid_anchor_generator_test.py -> b
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x86_64/egg/object_detection/anchor_generators
copying build/lib/object_detection/anchor_generators/multiscale_grid_anchor_generator.py ->
build/bdist.linux-x86_64/egg/object_detection/anchor_generators
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x86_64/egg/object_detection
creating build/bdist.linux-x86_64/egg/object_detection/protos
copying build/lib/object_detection/protos/optimizer_pb2.py -> build/bdist.linux-
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copying build/lib/object_detection/protos/bipartite_matcher.proto -> build/bdist.linux-
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copying build/lib/object_detection/protos/pipeline.proto -> build/bdist.linux-
x86_64/egg/object_detection/protos
copying build/lib/object_detection/protos/target_assigner_pb2.py -> build/bdist.linux-
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x86_64/egg/object_detection/protos
copying build/lib/object_detection/protos/flexible_grid_anchor_generator.proto ->
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copying build/lib/object_detection/protos/input_reader.proto -> build/bdist.linux-
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copying build/lib/object_detection/protos/mean_stddev_box_coder_pb2.py -> build/bdist.linux-
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copying build/lib/object_detection/protos/post_processing.proto -> build/bdist.linux-
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copying build/lib/object_detection/protos/string_int_label_map.proto -> build/bdist.linux-
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copying build/lib/object_detection/protos/__init__.py -> build/bdist.linux-
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creating build/bdist.linux-x86_64/egg/object_detection/dockerfiles/tf1
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creating build/bdist.linux-x86_64/egg/object_detection/models
copying build/lib/object_detection/models/ssd_mobilenet_edgetpu_feature_extractor.py ->
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build/bdist.linux-x86_64/egg/object_detection/models
copying build/lib/object_detection/models/center_net_mobilenet_v2_feature_extractor.py ->
build/bdist.linux-x86_64/egg/object_detection/models
copying build/lib/object_detection/models/feature_map_generators.py -> build/bdist.linux-
x86_64/egg/object_detection/models
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build/bdist.linux-x86_64/egg/object_detection/models
copying build/lib/object_detection/models/faster_rcnn_mobilenet_v1_feature_extractor.py ->
build/bdist.linux-x86_64/egg/object_detection/models
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ild/bdist.linux-x86_64/egg/object_detection/models
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build/bdist.linux-x86_64/egg/object detection/models
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copying build/lib/object_detection/legacy/train.py -> build/bdist.linux-x86_64/egg/object_detection/legacy
copying build/lib/object_detection/legacy/trainer.py -> build/bdist.linux-x86_64/egg/object_detection/legacy
copying build/lib/object_detection/legacy/evaluator.py -> build/bdist.linux-x86_64/egg/object_detection/legacy
copying build/lib/object_detection/legacy/eval.py -> build/bdist.linux-x86_64/egg/object_detection/legacy
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creating build/bdist.linux-x86_64/egg/object_detection/matchers
copying build/lib/object_detection/matchers/argmax_matcher.py -> build/bdist.linux-x86_64/egg/object_detection/matchers
copying build/lib/object_detection/matchers/argmax_matcher_test.py -> build/bdist.linux-x86_64/egg/object_detection/matchers
copying build/lib/object_detection/matchers/bipartite_matcher.py -> build/bdist.linux-x86_64/egg/object_detection/matchers
copying build/lib/object_detection/matchers/hungarian_matcher.py -> build/bdist.linux-x86_64/egg/object_detection/matchers
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creating build/bdist.linux-x86_64/egg/object_detection/utils
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copying build/lib/object_detection/README.md -> build/bdist.linux-x86_64/egg/object_detection
creating build/bdist.linux-x86_64/egg/object_detection/data
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copying build/lib/object_detection/data/mscoco_complete_label_map.pbtxt -> build/bdist.linux-x86_64/egg/object_detection/data
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copying build/lib/object_detection/model_main.py -> build/bdist.linux-x86_64/egg/object_detection
creating build/bdist.linux-x86_64/egg/object_detection/meta_architectures
copying build/lib/object_detection/meta_architectures/center_net_meta_arch.py -> build/bdist.linux-x86_64/egg/object_detection/meta_architectures
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creating build/bdist.linux-x86_64/egg/object_detection/core
copying build/lib/object_detection/core/batch_multiclass_nms_test.py -> build/bdist.linux-x86_64/egg/object_detection/core
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copying build/lib/object_detection/samples/configs/faster_rcnn_resnet101_fgvc.config ->
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copying
build/lib/object_detection/samples/configs/ssdlight_mobiledet_cpu_320x320_coco_sync_4x4.config -> b
uild/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/faster_rcnn_resnet101_ava_v2.1.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/rfcn_resnet101_pets.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/faster_rcnn_resnet101_kitti.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying
build/lib/object_detection/samples/configs/ssd_resnet50_v1_fpn_shared_box_predictor_640x640_coco14_
.config -> build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/rfcn_resnet101_coco.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/ssd_mobilenet_v1_300x300_coco14_sync.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying
build/lib/object_detection/samples/configs/ssd_mobilenet_v1_0.75_depth_quantized_300x300_coco14_syr
nfig -> build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/embedded_ssdlite_mobilenet_v1_coco.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/faster_rcnn_resnet50_coco.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying
build/lib/object_detection/samples/configs/ssd_mobilenet_v2_fpnlite_quantized_shared_box_predictor_
256_depthmultiplier_75_coco14_sync.config -> build/bdist.linux-
x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/mask_rcnn_inception_v2_coco.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying
build/lib/object_detection/samples/configs/faster_rcnn_inception_resnet_v2_atrous_oid.config -> bu
ild/bdist.linux-x86_64/egg/object_detection/samples/configs
copying
build/lib/object_detection/samples/configs/ssd_mobilenet_v2_mnasfpn_shared_box_predictor_320x320_cc
ync.config -> build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying
build/lib/object_detection/samples/configs/ssd_mobilenet_v1_fpn_shared_box_predictor_640x640_coco14
c.config -> build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/ssd_mobilenet_v2_quantized_300x300_coco.config
-> build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying
build/lib/object_detection/samples/configs/ssdlite_mobilenet_edgetpu_320x320_coco_quant.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/mask_rcnn_resnet50_atrous_coco.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/faster_rcnn_nas_coco.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/ssd_inception_v2_pets.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/ssdlite_mobilenet_v2_coco.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/ssdlite_mobilenet_v3_large_320x320_coco.config
-> build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying
build/lib/object_detection/samples/configs/faster_rcnn_inception_resnet_v2_atrous_cosine_lr_coco.cc
-> build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/faster_rcnn_inception_v2_coco.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying
build/lib/object_detection/samples/configs/mask_rcnn_inception_resnet_v2_atrous_coco.config -> bu
ild/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/mask_rcnn_resnet101_pets.config ->
build/bdist.linux-x86_64/egg/object_detection/samples/configs
copying build/lib/object_detection/samples/configs/ssd_mobilenet_v1_coco.config ->
```



```
8.config -> build/bdist.linux-x86_64/egg/object_detection/configs/tf2
copying build/lib/object_detection/configs/tf2/faster_rcnn_resnet152_v1_1024x1024_coco17_tpu-8.config -> build/bdist.linux-x86_64/egg/object_detection/configs/tf2
copying build/lib/object_detection/exporter_tf1_test.py -> build/bdist.linux-x86_64/egg/object_detection
copying build/lib/object_detection/inputs_test.py -> build/bdist.linux-x86_64/egg/object_detection
creating build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/instance_segmentation.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/preparing_inputs.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/oid_inference_and_evaluation.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/tpu_compatibility.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/running_on_mobile_tensorflowlite.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/configuring_jobs.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/tf1.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/using_your_own_dataset.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/tf2_detection_zoo.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/running_pets.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/running_notebook.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
creating build/bdist.linux-x86_64/egg/object_detection/g3doc/img
copying build/lib/object_detection/g3doc/img/kites_detections_output.jpg -> build/bdist.linux-x86_64/egg/object_detection/g3doc/img
copying build/lib/object_detection/g3doc/img/groupof_case_eval.png -> build/bdist.linux-x86_64/egg/object_detection/g3doc/img
copying build/lib/object_detection/g3doc/img/tf-od-api-logo.png -> build/bdist.linux-x86_64/egg/object_detection/g3doc/img
copying build/lib/object_detection/g3doc/img/example_cat.jpg -> build/bdist.linux-x86_64/egg/object_detection/g3doc/img
copying build/lib/object_detection/g3doc/img/oid_monkey_3b4168c89cecbc5b.jpg -> build/bdist.linux-x86_64/egg/object_detection/g3doc/img
copying build/lib/object_detection/g3doc/img/oid_bus_72e19c28aac34ed8.jpg -> build/bdist.linux-x86_64/egg/object_detection/g3doc/img
copying build/lib/object_detection/g3doc/img/kites_with_segment_overlay.png -> build/bdist.linux-x86_64/egg/object_detection/g3doc/img
copying build/lib/object_detection/g3doc/img/nongroupof_case_eval.png -> build/bdist.linux-x86_64/egg/object_detection/g3doc/img
copying build/lib/object_detection/g3doc/img/dogs_detections_output.jpg -> build/bdist.linux-x86_64/egg/object_detection/g3doc/img
copying build/lib/object_detection/g3doc/img/tensorboard.png -> build/bdist.linux-x86_64/egg/object_detection/g3doc/img
copying build/lib/object_detection/g3doc/img/oxford_pet.png -> build/bdist.linux-x86_64/egg/object_detection/g3doc/img
copying build/lib/object_detection/g3doc/img/tensorboard2.png -> build/bdist.linux-x86_64/egg/object_detection/g3doc/img
copying build/lib/object_detection/g3doc/faq.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/tf2.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/context_rcnn.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/tf2_classification_zoo.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/exporting_models.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/challenge_evaluation.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/tf1_training_and_evaluation.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/tf2_training_and_evaluation.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/defining_your_own_model.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/release_notes.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/evaluation_protocols.md -> build/bdist.linux-x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/running_on_mobile_tf2.md -> build/bdist.linux-
```

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x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/tf1_detection_zoo.md -> build/bdist.linux-
x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/g3doc/tpu_exporters.md -> build/bdist.linux-
x86_64/egg/object_detection/g3doc
copying build/lib/object_detection/model_lib_tf1_test.py -> build/bdist.linux-
x86_64/egg/object_detection
copying build/lib/object_detection/export_tflite_graph_tf2.py -> build/bdist.linux-
x86_64/egg/object_detection
copying build/lib/object_detection/inputs.py -> build/bdist.linux-x86_64/egg/object_detection
creating build/bdist.linux-x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/coco_evaluation_test.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/io_utils.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/oid_vrd_challenge_evaluation_utils_test.py ->
build/bdist.linux-x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/oid_vrd_challenge_evaluation_utils.py ->
build/bdist.linux-x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/oid_vrd_challenge_evaluation.py -> build/bdist.linux-x8
6_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/lvis_tools_test.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/coco_evaluation.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/lvis_evaluation.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/oid_challenge_evaluation_utils_test.py ->
build/bdist.linux-x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/coco_tools_test.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/coco_tools.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/lvis_evaluation_test.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/calibration_metrics.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/calibration_evaluation_tf1_test.py ->
build/bdist.linux-x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/offline_eval_map_corloc_test.py -> build/bdist.linux-x8
6_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/calibration_evaluation.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/offline_eval_map_corloc.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/tf_example_parser.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/lvis_tools.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/oid_challenge_evaluation.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/calibration_metrics_tf1_test.py -> build/bdist.linux-x8
6_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/oid_challenge_evaluation_utils.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/__init__.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
copying build/lib/object_detection/metrics/tf_example_parser_test.py -> build/bdist.linux-
x86_64/egg/object_detection/metrics
creating build/bdist.linux-x86_64/egg/object_detection/data_decoders
copying build/lib/object_detection/data_decoders/tf_sequence_example_decoder.py ->
build/bdist.linux-x86_64/egg/object_detection/data_decoders
copying build/lib/object_detection/data_decoders/tf_example_decoder_test.py -> build/bdist.linux-x
86_64/egg/object_detection/data_decoders
copying build/lib/object_detection/data_decoders/tf_example_decoder.py -> build/bdist.linux-
x86_64/egg/object_detection/data_decoders
copying build/lib/object_detection/data_decoders/tf_sequence_example_decoder_test.py ->
build/bdist.linux-x86_64/egg/object_detection/data_decoders
copying build/lib/object_detection/data_decoders/__init__.py -> build/bdist.linux-
x86_64/egg/object_detection/data_decoders
copying build/lib/object_detection/CONTRIBUTING.md -> build/bdist.linux-
x86_64/egg/object_detection
copying build/lib/object_detection/export_tflite_ssd_graph_lib.py -> build/bdist.linux-
x86_64/egg/object_detection
copying build/lib/object_detection/__init__.py -> build/bdist.linux-x86_64/egg/object_detection
creating build/bdist.linux-x86_64/egg/object_detection/test_data
copying build/lib/object_detection/test_data/pets_examples.record -> build/bdist.linux-
```

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x86_64/egg/object_detection/test_data
copying build/lib/object_detection/test_data/snapshot_serengeti_sequence_examples.record ->
build/bdist.linux-x86_64/egg/object_detection/test_data
copying build/lib/object_detection/test_data/context_rcnn_camera_trap.config -> build/bdist.linux-
x86_64/egg/object_detection/test_data
copying build/lib/object_detection/test_data/ssd_mobilenet_v1_fpp.config -> build/bdist.linux-
x86_64/egg/object_detection/test_data
creating build/bdist.linux-x86_64/egg/object_detection/predictors
copying build/lib/object_detection/predictors/rfcn_keras_box_predictor.py -> build/bdist.linux-x86
_64/egg/object_detection/predictors
copying build/lib/object_detection/predictors/rfcn_keras_box_predictor_tf2_test.py ->
build/bdist.linux-x86_64/egg/object_detection/predictors
copying build/lib/object_detection/predictors/convolutional_keras_box_predictor_tf2_test.py -> bui
ld/bdist.linux-x86_64/egg/object_detection/predictors
copying build/lib/object_detection/predictors/convolutional_keras_box_predictor.py ->
build/bdist.linux-x86_64/egg/object_detection/predictors
copying build/lib/object_detection/predictors/mask_rcnn_keras_box_predictor_tf2_test.py ->
build/bdist.linux-x86_64/egg/object_detection/predictors
copying build/lib/object_detection/predictors/mask_rcnn_box_predictor.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors
copying build/lib/object_detection/predictors/mask_rcnn_box_predictor_tf1_test.py ->
build/bdist.linux-x86_64/egg/object_detection/predictors
copying build/lib/object_detection/predictors/rfcn_box_predictor.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors
copying build/lib/object_detection/predictors/rfcn_box_predictor_tf1_test.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors
creating build/bdist.linux-x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/head.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/keras_box_head_tf2_test.py ->
build/bdist.linux-x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/keras_class_head.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/box_head_tf1_test.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/box_head.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/keras_class_head_tf2_test.py ->
build/bdist.linux-x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/class_head.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/keypoint_head.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/keras_box_head.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/mask_head.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/class_head_tf1_test.py -> build/bdist.linux-x8
6_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/keypoint_head_tf1_test.py ->
build/bdist.linux-x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/mask_head_tf1_test.py -> build/bdist.linux-x86
_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/keras_mask_head.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/heads/keras_mask_head_tf2_test.py ->
build/bdist.linux-x86_64/egg/object_detection/predictors/heads
copying build/lib/object_detection/predictors/_init__.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors
copying build/lib/object_detection/predictors/convolutional_box_predictor.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors
copying build/lib/object_detection/predictors/mask_rcnn_keras_box_predictor.py ->
build/bdist.linux-x86_64/egg/object_detection/predictors
copying build/lib/object_detection/predictors/_init__.py -> build/bdist.linux-
x86_64/egg/object_detection/predictors
copying build/lib/object_detection/predictors/convolutional_box_predictor_tf1_test.py ->
build/bdist.linux-x86_64/egg/object_detection/predictors
byte-compiling build/bdist.linux-x86_64/egg/object_detection/exporter_lib_v2.py to
exporter_lib_v2.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/oid_hierarchical_labels_expansion.py to
oid_hierarchical_labels_expansion.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/create_kitti_tf_record_test.py to
create_kitti_tf_record_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/oid_hierarchical_labels_expansion_test.py to
```

```
oid_hierarchical_labels_expansion_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/create_coco_tf_record_test.py to
create_coco_tf_record_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/seq_example_util_test.py to
seq_example_util_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/dataset_tools/create_oid_tf_record.py
to create_oid_tf_record.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/tf_record_creation_util_test.py to
tf_record_creation_util_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/create_coco_tf_record.py to
create_coco_tf_record.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/dataset_tools/create_pet_tf_record.py
to create_pet_tf_record.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/oid_tfrecord_creation.py to
oid_tfrecord_creation.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/tf_record_creation_util.py to
tf_record_creation_util.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/create_kitti_tf_record.py to
create_kitti_tf_record.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/create_pascal_tf_record_test.py to
create_pascal_tf_record_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/dataset_tools/seq_example_util.py to
seq_example_util.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/create_ava_actions_tf_record.py to
create_ava_actions_tf_record.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/context_rcnn/create_cococameratraps_tfexample_tf2_test.py
to create_cococameratraps_tfexample_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/context_rcnn/add_context_to_examples.py to
add_context_to_examples.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/dataset_tools/context_rcnn/create_cococameratraps_tfexample_main.py to
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x86_64/egg/object_detection/dataset_tools/context_rcnn/generate_embedding_data_tf2_test.py to
generate_embedding_data_tf2_test.cpython-36.pyc
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__init__.cpython-36.pyc
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setup.cpython-36.pyc
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36.pyc
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libration_builder.cpython-36.pyc
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o post_processing_builder.cpython-36.pyc
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to calibration_builder_test.cpython-36.pyc
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reprocessor_builder.cpython-36.pyc
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dataset_builder.cpython-36.pyc
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nput_reader_builder.cpython-36.pyc
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perparams_builder.cpython-36.pyc
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to anchor_generator_builder.cpython-36.pyc
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image_resizer_builder_test.cpython-36.pyc
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el_builder_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/builders/target_assigner_builder_test.py to
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target_assigner_builder_test.cpython-36.pyc
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byte-compiling build/bdist.linux-x86_64/egg/object_detection/protos/argmax_matcher_pb2.py to argmax_matcher_pb2.cpython-36.pyc
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byte-compiling build/bdist.linux-x86_64/egg/object_detection/protos/string_int_label_map_pb2.py to string_int_label_map_pb2.cpython-36.pyc
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byte-compiling build/bdist.linux-x86_64/egg/object_detection/protos/box_coder_pb2.py to box_coder_pb2.cpython-36.pyc
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eypoint_box_coder_pb2.cpython-36.pyc
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input_reader_pb2.cpython-36.pyc
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36.pyc
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are_box_coder_pb2.cpython-36.pyc
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partite_matcher_pb2.cpython-36.pyc
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post_processing_pb2.cpython-36.pyc
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o faster_rcnn_box_coder_pb2.cpython-36.pyc
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36.pyc
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matcher_pb2.cpython-36.pyc
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o grid_anchor_generator_pb2.cpython-36.pyc
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hor_generator_pb2.cpython-36.pyc
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eature_map_generators.cpython-36.pyc
byte-compiling build/bdist.linux-
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ssd_mobilenet_v1_feature_extractor_tf1_test.cpython-36.pyc
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ssd_mobilenet_v1_fpn_feature_extractor.cpython-36.pyc
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faster_rcnn_inception_resnet_v2_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/faster_rcnn_inception_resnet_v2_feature_extractor.py to
faster_rcnn_inception_resnet_v2_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/faster_rcnn_inception_resnet_v2_keras_feature_extractor_tf2_test.py to
faster_rcnn_inception_resnet_v2_keras_feature_extractor_tf2_test.cpython-36.pvc
```

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byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/faster_rcnn_nas_feature_extractor_tf1_test.py to
faster_rcnn_nas_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_mobilenet_v1_ppn_feature_extractor.py to
ssd_mobilenet_v1_ppn_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/keras_models/inception_resnet_v2.py to
inception_resnet_v2.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/keras_models/mobilenet_v2_tf2_test.py to
mobilenet_v2_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/models/keras_models/mobilenet_v2.py to
mobilenet_v2.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/models/keras_models/resnet_v1.py to
resnet_v1.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/keras_models/resnet_v1_tf2_test.py to
resnet_v1_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/models/keras_models/model_utils.py to
model_utils.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/models/keras_models/test_utils.py to
test_utils.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/keras_models/mobilenet_v1_tf2_test.py to
mobilenet_v1_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/keras_models/hourglass_network_tf2_test.py to
hourglass_network_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/keras_models/hourglass_network.py to hourglass_network.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/keras_models/convert_keras_models.py to
convert_keras_models.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/keras_models/inception_resnet_v2_tf2_test.py to
inception_resnet_v2_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/keras_models/base_models/original_mobilenet_v2.py to
original_mobilenet_v2.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/models/keras_models/mobilenet_v1.py to
mobilenet_v1.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/models/keras_models/__init__.py to __
init__.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/center_net_mobilenet_v2_feature_extractor_tf2_test.py to
center_net_mobilenet_v2_feature_extractor_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/faster_rcnn_nas_feature_extractor.py to
faster_rcnn_nas_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/center_net_mobilenet_v2_fpn_feature_extractor.py to
center_net_mobilenet_v2_fpn_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_inception_v2_feature_extractor_tf1_test.py to
ssd_inception_v2_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_resnet_v1_fpn_feature_extractor_tf2_test.py to
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byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_mobilenet_v2_feature_extractor_tf2_test.py to
ssd_mobilenet_v2_feature_extractor_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_mobilenet_v2_fpn_feature_extractor_tf1_test.py to
ssd_mobilenet_v2_fpn_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/bidirectional_feature_pyramid_generators.py to
bidirectional_feature_pyramid_generators.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/faster_rcnn_pnas_feature_extractor.py to
faster_rcnn_pnas_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/center_net_hourglass_feature_extractor_tf2_test.py to
center_net_hourglass_feature_extractor_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_inception_v3_feature_extractor_tf1_test.py to
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..._v1_egg/object_detection/models/ssd_inception_v3_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_resnet_v1_ppn_feature_extractor.py to
ssd_resnet_v1_ppn_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_mobilenet_v1_fpn_keras_feature_extractor.py to
ssd_mobilenet_v1_fpn_keras_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/faster_rcnn_inception_v2_feature_extractor.py to
faster_rcnn_inception_v2_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/faster_rcnn_resnet_keras_feature_extractor.py to
faster_rcnn_resnet_keras_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_mobilenet_v1_fpn_feature_extractor_tf1_test.py to
ssd_mobilenet_v1_fpn_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/faster_rcnn_pnas_feature_extractor_tf1_test.py to
faster_rcnn_pnas_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_mobilenet_v2_feature_extractor_tf1_test.py to
ssd_mobilenet_v2_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/center_net_resnet_v1_fpn_feature_extractor_tf2_test.py to
center_net_resnet_v1_fpn_feature_extractor_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_mobilenet_v3_feature_extractor_testbase.py to
ssd_mobilenet_v3_feature_extractor_testbase.cpython-36.pyc
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x86_64/egg/object_detection/models/ssd_pnasnet_feature_extractor_tf1_test.py to
ssd_pnasnet_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/faster_rcnn_resnet_v1_feature_extractor.py to
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x86_64/egg/object_detection/models/ssd_inception_v3_feature_extractor.py to
ssd_inception_v3_feature_extractor.cpython-36.pyc
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x86_64/egg/object_detection/models/ssd_resnet_v1_ppn_feature_extractor_tf1_test.py to
ssd_resnet_v1_ppn_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_mobilenet_v1_ppn_feature_extractor_tf1_test.py to
ssd_mobilenet_v1_ppn_feature_extractor_tf1_test.cpython-36.pyc
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x86_64/egg/object_detection/models/embedded_ssd_mobilenet_v1_feature_extractor.py to
embedded_ssd_mobilenet_v1_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_resnet_v1_ppn_feature_extractor_testbase.py to
ssd_resnet_v1_ppn_feature_extractor_testbase.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_efficientnet_bifpn_feature_extractor.py to
ssd_efficientnet_bifpn_feature_extractor.cpython-36.pyc
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ssd_feature_extractor_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_resnet_v1_fpn_feature_extractor_testbase.py to
ssd_resnet_v1_fpn_feature_extractor_testbase.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_mobilenet_v1_feature_extractor_tf2_test.py to
ssd_mobilenet_v1_feature_extractor_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/center_net_hourglass_feature_extractor.py to
center_net_hourglass_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_mobilenet_v3_feature_extractor_tf1_test.py to
ssd_mobilenet_v3_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_resnet_v1_fpn_feature_extractor_tf1_test.py to
ssd_resnet_v1_fpn_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_mobilenet_v2_feature_extractor.py to
ssd_mobilenet_v2_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_mobilenet_v3_feature_extractor.py to
ssd_mobilenet_v3_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/faster_rcnn_resnet_v1_fpn_keras_feature_extractor.py to
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..._v1_coco_feature_extractor.py to
faster_rcnn_resnet_v1_fpn_keras_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/models/_init_.py to
__init__.cpython-36.pyc
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x86_64/egg/object_detection/models/ssd_mobilenet_edgetpu_feature_extractor_testbase.py to
ssd_mobilenet_edgetpu_feature_extractor_testbase.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/center_net_mobilenet_v2_fpn_feature_extractor_tf2_test.py to ce
nter_net_mobilenet_v2_fpn_feature_extractor_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/faster_rcnn_mobilenet_v1_feature_extractor_tf1_test.py to
faster_rcnn_mobilenet_v1_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_inception_v2_feature_extractor.py to
ssd_inception_v2_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/faster_rcnn_resnet_keras_feature_extractor_tf2_test.py to
faster_rcnn_resnet_keras_feature_extractor_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/ssd_mobilenet_v1_keras_feature_extractor.py to
ssd_mobilenet_v1_keras_feature_extractor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/models/faster_rcnn_inception_v2_feature_extractor_tf1_test.py to
faster_rcnn_inception_v2_feature_extractor_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/legacy/trainer_tf1_test.py to
trainer_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/legacy/train.py to train.cpython-36.p
yc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/legacy/trainer.py to trainer.cpython-
36.pyc
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evaluator.cpython-36.pyc
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__init__.cpython-36.pyc
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6.pyc
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faster_rcnn.cpython-36.pyc
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utils.cpython-36.pyc
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byte-compiling build/bdist.linux-
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argmax_matcher.cpython-36.pyc
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gmax_matcher_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/matchers/bipartite_matcher.py to
bipartite_matcher.cpython-36.pyc
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hungarian_matcher.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/matchers/bipartite_matcher_tf1_test.py to
bipartite_matcher_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/matchers/hungarian_matcher_tf2_test.py to
hungarian_matcher_tf2_test.cpython-36.pyc
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pyc
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eval_util_test.cpython-36.pyc
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python-36.pyc
```

```
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np_box_mask_list.cpython-36.pyc
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model_util_tf2_test.cpython-36.pyc
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np_box_list_test.cpython-36.pyc
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json_utils.cpython-36.pyc
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tf_version.cpython-36.pyc
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per_image_evaluation.cpython-36.pyc
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test_utils_test.cpython-36.pyc
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object_detection_evaluation.cpython-36.pyc
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per_image_vrd_evaluation.cpython-36.pyc
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test_case.cpython-36.pyc
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learning_schedules_test.cpython-36.pyc
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bifpn_utils.cpython-36.pyc
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variables_helper_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/json_utils_test.py to
json_utils_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/np_box_mask_list_ops_test.py to
np_box_mask_list_ops_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/per_image_evaluation_test.py to
per_image_evaluation_test.cpython-36.pyc
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shape_utils.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/category_util.py to
category_util.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/learning_schedules.py to
learning_schedules.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/shape_utils_test.py to
shape_utils_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/metrics_test.py to
metrics_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/np_mask_ops_test.py to
np_mask_ops_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/colab_utils.py to
colab_utils.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/vrd_evaluation_test.py to
vrd_evaluation_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/spatial_transform_ops.py to
spatial_transform_ops.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/np_box_list.py to
np_box_list.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/patch_ops.py to
patch_ops.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/label_map_util.py to
label_map_util.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/test_utils.py to
test_utils.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/visualization_utils_test.py to
visualization_utils_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/ops_test.py to
ops_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/static_shape.py to
static_shape.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/spatial_transform_ops_test.py to
spatial_transform_ops_test.cpython-36.pyc
```

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  v spatial_transform_ops_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/dataset_util_test.py to
dataset_util_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/target_assigner_utils.py to tar
get_assigner_utils.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/ops.py to ops.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/label_map_util_test.py to
label_map_util_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/np_box_mask_list_ops.py to
np_box_mask_list_ops.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/utils/test_case_test.py to
test_case_test.cpython-36.pyc
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6.pyc
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eypoint_box_coder.cpython-36.pyc
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are_box_coder.cpython-36.pyc
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to keypoint_box_coder_test.cpython-36.pyc
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o square_box_coder_test.cpython-36.pyc
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o faster_rcnn_box_coder.cpython-36.pyc
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ort_tflite_graph_lib_tf2.cpython-36.pyc
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6.pyc
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https://www.tensorflow.org/tutorials/images/
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nit__.cpython-36.pyc
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36.pyc
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ibatch_sampler_test.cpython-36.pyc
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36.pyc
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is_evaluation_test.cpython-36.pyc
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ibration_metrics.cpython-36.pyc
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o oid_challenge_evaluation.cpython-36.pyc
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o tf_example_decoder.cpython-36.pyc
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ort_tflite_ssd_graph_lib.cpython-36.pyc
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36.pyc
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mask_rcnn_box_predictor_tf1_test.cpython-36.pyc
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fcn_box_predictor.cpython-36.pyc
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keras_box_head_tf2_test.cpython-36.pyc
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to keras_class_head.cpython-36.pyc
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ss_head.cpython-36.pyc
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x86_64/egg/object_detection/predictors/heads/class_head_tf1_test.py to
class_head_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/predictors/heads/keypoint_head_tf1_test.py to
keypoint_head_tf1_test.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/predictors/heads/mask_head_tf1_test.py to mask_head_tf1_test.cpython-3
6.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/predictors/heads/keras_mask_head.py t
o keras_mask_head.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/predictors/heads/keras_mask_head_tf2_test.py to
keras_mask_head_tf2_test.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/predictors/heads/__init__.py to
__init__.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/predictors/convolutional_box_predictor.py to
convolutional_box_predictor.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/predictors/mask_rcnn_keras_box_predictor.py to
mask_rcnn_keras_box_predictor.cpython-36.pyc
byte-compiling build/bdist.linux-x86_64/egg/object_detection/predictors/__init__.py to
__init__.cpython-36.pyc
byte-compiling build/bdist.linux-
x86_64/egg/object_detection/predictors/convolutional_box_predictor_tf1_test.py to
convolutional_box_predictor_tf1_test.cpython-36.pyc
creating build/bdist.linux-x86_64/egg/EGG-INFO
copying object_detection.egg-info/PKG-INFO -> build/bdist.linux-x86_64/egg/EGG-INFO
copying object_detection.egg-info/SOURCES.txt -> build/bdist.linux-x86_64/egg/EGG-INFO
copying object_detection.egg-info/dependency_links.txt -> build/bdist.linux-x86_64/egg/EGG-INFO
copying object_detection.egg-info/requirements.txt -> build/bdist.linux-x86_64/egg/EGG-INFO
copying object_detection.egg-info/top_level.txt -> build/bdist.linux-x86_64/egg/EGG-INFO
zip_safe flag not set; analyzing archive contents...
object_detection.core.__pycache__.densepose_ops.cpython-36: module references __file__
object_detection.core.__pycache__.preprocessor.cpython-36: module MAY be using inspect.stack
```

```
object_detection.utils.__pycache__.autoaugment_utils.cpython-36: module MAY be using inspect.stack
creating dist
creating 'dist/object_detection-0.1-py3.6.egg' and adding 'build/bdist.linux-x86_64/egg' to it
removing 'build/bdist.linux-x86_64/egg' (and everything under it)
Processing object_detection-0.1-py3.6.egg
creating /usr/local/lib/python3.6/dist-packages/object_detection-0.1-py3.6.egg
Extracting object_detection-0.1-py3.6.egg to /usr/local/lib/python3.6/dist-packages
Adding object-detection 0.1 to easy-install.pth file

Installed /usr/local/lib/python3.6/dist-packages/object_detection-0.1-py3.6.egg
Processing dependencies for object-detection==0.1
Searching for Cython==0.29.21
Best match: Cython 0.29.21
Adding Cython 0.29.21 to easy-install.pth file
Installing cygdb script to /usr/local/bin
Installing cython script to /usr/local/bin
Installing cythonize script to /usr/local/bin

Using /usr/local/lib/python3.6/dist-packages
Searching for matplotlib==3.2.2
Best match: matplotlib 3.2.2
Adding matplotlib 3.2.2 to easy-install.pth file

Using /usr/local/lib/python3.6/dist-packages
Searching for Pillow==7.0.0
Best match: Pillow 7.0.0
Adding Pillow 7.0.0 to easy-install.pth file

Using /usr/local/lib/python3.6/dist-packages
Searching for kiwisolver==1.3.1
Best match: kiwisolver 1.3.1
Adding kiwisolver 1.3.1 to easy-install.pth file

Using /usr/local/lib/python3.6/dist-packages
Searching for pyparsing==2.4.7
Best match: pyparsing 2.4.7
Adding pyparsing 2.4.7 to easy-install.pth file

Using /usr/local/lib/python3.6/dist-packages
Searching for python-dateutil==2.8.1
Best match: python-dateutil 2.8.1
Adding python-dateutil 2.8.1 to easy-install.pth file

Using /usr/local/lib/python3.6/dist-packages
Searching for cycler==0.10.0
Best match: cycler 0.10.0
Adding cycler 0.10.0 to easy-install.pth file

Using /usr/local/lib/python3.6/dist-packages
Searching for numpy==1.18.5
Best match: numpy 1.18.5
Adding numpy 1.18.5 to easy-install.pth file
Installing f2py script to /usr/local/bin
Installing f2py3 script to /usr/local/bin
Installing f2py3.6 script to /usr/local/bin

Using /usr/local/lib/python3.6/dist-packages
Searching for six==1.15.0
Best match: six 1.15.0
Adding six 1.15.0 to easy-install.pth file

Using /usr/local/lib/python3.6/dist-packages
Finished processing dependencies for object-detection==0.1
```

In []:

```
#/content/models/research/slim/nets
#shutil.copy( '/content/models/research/slim/nets', "/content/models/research/object_detection/")
!cp -r '/content/models/research/slim/nets' "/content/models/research/object_detection/"
```

In []:

```
#will test if we are ready with desired lib by compiling builder.py file
%cd '/content/models/research/object_detection/builders'
```

```
!python /content/models/research/object_detection/builders/model_builder_tf2_test.py

/content/models/research/object_detection/builders
2020-12-05 08:46:23.747207: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudart.so.10.1
Running tests under Python 3.6.9: /usr/bin/python3
[ RUN      ] ModelBuilderTF2Test.test_create_center_net_model
2020-12-05 08:46:26.397008: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcuda.so.1
2020-12-05 08:46:26.455446: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-05 08:46:26.456080: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1716] Found device
0 with properties:
pciBusID: 0000:00:04.0 name: Tesla T4 computeCapability: 7.5
coreClock: 1.59GHz coreCount: 40 deviceMemorySize: 14.73GiB deviceMemoryBandwidth: 298.08GiB/s
2020-12-05 08:46:26.456169: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudart.so.10.1
2020-12-05 08:46:26.713977: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcublas.so.10
2020-12-05 08:46:26.841468: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcufft.so.10
2020-12-05 08:46:26.864269: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcurand.so.10
2020-12-05 08:46:27.151917: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcusolver.so.10
2020-12-05 08:46:27.185024: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcusparse.so.10
2020-12-05 08:46:27.697522: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudnn.so.7
2020-12-05 08:46:27.697725: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-05 08:46:27.698478: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-05 08:46:27.699091: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1858] Adding
visible gpu devices: 0
2020-12-05 08:46:27.771987: I tensorflow/core/platform/profile_utils/cpu_utils.cc:104] CPU
Frequency: 2200000000 Hz
2020-12-05 08:46:27.772231: I tensorflow/compiler/xla/service/service.cc:168] XLA service
0x189ef40 initialized for platform Host (this does not guarantee that XLA will be used). Devices:
2020-12-05 08:46:27.772260: I tensorflow/compiler/xla/service/service.cc:176] StreamExecutor dev
ice (0): Host, Default Version
2020-12-05 08:46:27.916431: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-05 08:46:27.917108: I tensorflow/compiler/xla/service/service.cc:168] XLA service
0x189f100 initialized for platform CUDA (this does not guarantee that XLA will be used). Devices:
2020-12-05 08:46:27.917158: I tensorflow/compiler/xla/service/service.cc:176] StreamExecutor dev
ice (0): Tesla T4, Compute Capability 7.5
2020-12-05 08:46:27.917933: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-05 08:46:27.918490: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1716] Found device
0 with properties:
pciBusID: 0000:00:04.0 name: Tesla T4 computeCapability: 7.5
coreClock: 1.59GHz coreCount: 40 deviceMemorySize: 14.73GiB deviceMemoryBandwidth: 298.08GiB/s
2020-12-05 08:46:27.918535: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudart.so.10.1
2020-12-05 08:46:27.918578: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcublas.so.10
2020-12-05 08:46:27.918603: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcufft.so.10
2020-12-05 08:46:27.918625: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcurand.so.10
2020-12-05 08:46:27.918644: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcusolver.so.10
2020-12-05 08:46:27.918666: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcusparse.so.10
2020-12-05 08:46:27.918690: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudnn.so.7
2020-12-05 08:46:27.918761: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-05 08:46:27.919350: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1) but there must be at least one NUMA node so re
```

NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re turning NUMA node zero

2020-12-05 08:46:27.919845: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1858] Adding visible gpu devices: 0

2020-12-05 08:46:27.923867: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcudart.so.10.1

2020-12-05 08:46:31.758227: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1257] Device interconnect StreamExecutor with strength 1 edge matrix:

2020-12-05 08:46:31.758285: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1263] 0 0

2020-12-05 08:46:31.758299: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1276] 0: N

2020-12-05 08:46:31.764248: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re turning NUMA node zero

2020-12-05 08:46:31.764978: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re turning NUMA node zero

2020-12-05 08:46:31.765681: W tensorflow/core/common_runtime/gpu/gpu_bfc_allocator.cc:39] Overriding allow_growth setting because the TF_FORCE_GPU_ALLOW_GROWTH environment variable is set. Original config value was 0.

2020-12-05 08:46:31.765740: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1402] Created TensorFlow device (/job:localhost/replica:0/task:0/device:GPU:0 with 13962 MB memory) -> physical GPU (device: 0, name: Tesla T4, pci bus id: 0000:00:04.0, compute capability: 7.5)

INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_create_center_net_model): 9.93s

I1205 08:46:36.111449 139874413795200 test_util.py:1973]

time(__main__.ModelBuilderTF2Test.test_create_center_net_model): 9.93s

[OK] ModelBuilderTF2Test.test_create_center_net_model

[RUN] ModelBuilderTF2Test.test_create_experimental_model

INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_create_experimental_model): 0.0s

I1205 08:46:36.112839 139874413795200 test_util.py:1973]

time(__main__.ModelBuilderTF2Test.test_create_experimental_model): 0.0s

[OK] ModelBuilderTF2Test.test_create_experimental_model

[RUN] ModelBuilderTF2Test.test_create_faster_rcnn_from_config_with_crop_feature0 (True)

INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_from_config_with_crop_feature0 (True)): 0.04s

I1205 08:46:36.151539 139874413795200 test_util.py:1973]

time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_from_config_with_crop_feature0 (True)): 0.04s

[OK] ModelBuilderTF2Test.test_create_faster_rcnn_from_config_with_crop_feature0 (True)

[RUN] ModelBuilderTF2Test.test_create_faster_rcnn_from_config_with_crop_feature1 (False)

INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_from_config_with_crop_feature1 (False)): 0.02s

I1205 08:46:36.172255 139874413795200 test_util.py:1973]

time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_from_config_with_crop_feature1 (False)): 0.02s

[OK] ModelBuilderTF2Test.test_create_faster_rcnn_from_config_with_crop_feature1 (False)

[RUN] ModelBuilderTF2Test.test_create_faster_rcnn_model_from_config_with_example_miner

INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_model_from_config_with_example_miner): 0.02s

I1205 08:46:36.193460 139874413795200 test_util.py:1973]

time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_model_from_config_with_example_miner): 0.02s

[OK] ModelBuilderTF2Test.test_create_faster_rcnn_model_from_config_with_example_miner

[RUN] ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_faster_rcnn_with_matmul

INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_faster_rcnn_with_matmul): 0.15s

I1205 08:46:36.342639 139874413795200 test_util.py:1973]

time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_faster_rcnn_with_matmul): 0.15s

[OK] ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_faster_rcnn_with_matmul

[RUN] ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_faster_rcnn_without_matmul

INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_faster_rcnn_without_matmul): 0.14s

I1205 08:46:36.479795 139874413795200 test_util.py:1973]

time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_faster_rcnn_without_matmul): 0.14s

[OK] ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_faster_rcnn_without_matmul

[RUN] ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_mask_rcnn_with_matmul

INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_mask_rcnn_with_matmul): 0.14s

I1205 08:46:36.624908 139874413795200 test_util.py:1973]

time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_mask_rcnn_with_matmul): 0.14s

[OK] ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_mask_rcnn_with_matmul

[RUN] ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_mask_rcnn_without_matmul

```
INFO:tensorflow:test_create_faster_rcnn_models_from_config_mask_rcnn_without_matmul
INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_mask_rcnn_without_matmul): 0.14s
I1205 08:46:36.766751 139874413795200 test_util.py:1973]
time(__main__.ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_mask_rcnn_without_matmul): 0.14s
[      OK ]
ModelBuilderTF2Test.test_create_faster_rcnn_models_from_config_mask_rcnn_without_matmul
[ RUN      ] ModelBuilderTF2Test.test_create_rfcn_model_from_config
INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_create_rfcn_model_from_config): 0.15s
I1205 08:46:36.917148 139874413795200 test_util.py:1973]
time(__main__.ModelBuilderTF2Test.test_create_rfcn_model_from_config): 0.15s
[      OK ] ModelBuilderTF2Test.test_create_rfcn_model_from_config
[ RUN      ] ModelBuilderTF2Test.test_create_ssd_fpn_model_from_config
INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_create_ssd_fpn_model_from_config): 0.04s
I1205 08:46:36.962418 139874413795200 test_util.py:1973]
time(__main__.ModelBuilderTF2Test.test_create_ssd_fpn_model_from_config): 0.04s
[      OK ] ModelBuilderTF2Test.test_create_ssd_fpn_model_from_config
[ RUN      ] ModelBuilderTF2Test.test_create_ssd_models_from_config
I1205 08:46:37.253791 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:144]
EfficientDet EfficientNet backbone version: efficientnet-b0
I1205 08:46:37.253954 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:145]
EfficientDet BiFPN num filters: 64
I1205 08:46:37.254026 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:147]
EfficientDet BiFPN num iterations: 3
I1205 08:46:37.259794 139874413795200 efficientnet_model.py:148] round_filter input=32 output=32
I1205 08:46:37.286411 139874413795200 efficientnet_model.py:148] round_filter input=32 output=32
I1205 08:46:37.286537 139874413795200 efficientnet_model.py:148] round_filter input=16 output=16
I1205 08:46:37.359544 139874413795200 efficientnet_model.py:148] round_filter input=16 output=16
I1205 08:46:37.359679 139874413795200 efficientnet_model.py:148] round_filter input=24 output=24
I1205 08:46:37.560223 139874413795200 efficientnet_model.py:148] round_filter input=24 output=24
I1205 08:46:37.560371 139874413795200 efficientnet_model.py:148] round_filter input=40 output=40
I1205 08:46:37.756639 139874413795200 efficientnet_model.py:148] round_filter input=40 output=40
I1205 08:46:37.756799 139874413795200 efficientnet_model.py:148] round_filter input=80 output=80
I1205 08:46:38.056784 139874413795200 efficientnet_model.py:148] round_filter input=80 output=80
I1205 08:46:38.056954 139874413795200 efficientnet_model.py:148] round_filter input=112 output=112
I1205 08:46:38.354951 139874413795200 efficientnet_model.py:148] round_filter input=112 output=112
I1205 08:46:38.355130 139874413795200 efficientnet_model.py:148] round_filter input=192 output=192
I1205 08:46:38.876903 139874413795200 efficientnet_model.py:148] round_filter input=192 output=192
I1205 08:46:38.877065 139874413795200 efficientnet_model.py:148] round_filter input=320 output=320
I1205 08:46:38.964070 139874413795200 efficientnet_model.py:148] round_filter input=1280
output=1280
I1205 08:46:39.001464 139874413795200 efficientnet_model.py:462] Building model efficientnet with
params ModelConfig(width_coefficient=1.0, depth_coefficient=1.0, resolution=224, dropout_rate=0.2,
blocks=(BlockConfig(input_filters=32, output_filters=16, kernel_size=3, num_repeat=1,
expand_ratio=1, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=16, output_filters=24, kernel_size=3,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=24, output_filters=40, kernel_size=5,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=40, output_filters=80, kernel_size=3,
num_repeat=3, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=80, output_filters=112, kernel_size=5,
num_repeat=3, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=112, output_filters=192, kernel_size=5,
num_repeat=4, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=192, output_filters=320, kernel_size=3,
num_repeat=1, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise')), stem_base_filters=32, top_base_filters=1280, activation='simple_swish', batch_norm='default', bn_momentum=0.99, bn_epsilon=0.001, weight_decay=5e-06,
drop_connect_rate=0.2, depth_divisor=8, min_depth=None, use_se=True, input_channels=3,
num_classes=1000, model_name='efficientnet', rescale_input=False, data_format='channels_last', dtype='float32')
I1205 08:46:39.083264 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:144]
EfficientDet EfficientNet backbone version: efficientnet-b1
I1205 08:46:39.083405 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:145]
EfficientDet BiFPN num filters: 88
I1205 08:46:39.083479 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:147]
EfficientDet BiFPN num iterations: 4
I1205 08:46:39.088684 139874413795200 efficientnet_model.py:148] round_filter input=32 output=32
I1205 08:46:39.110080 139874413795200 efficientnet_model.py:148] round_filter input=32 output=32
I1205 08:46:39.110226 139874413795200 efficientnet_model.py:148] round_filter input=16 output=16
I1205 08:46:39.264977 139874413795200 efficientnet_model.py:148] round_filter input=16 output=16
I1205 08:46:39.265183 139874413795200 efficientnet_model.py:148] round_filter input=24 output=24
I1205 08:46:39.549785 139874413795200 efficientnet_model.py:148] round_filter input=24 output=24
I1205 08:46:39.549953 139874413795200 efficientnet_model.py:148] round_filter input=40 output=40
I1205 08:46:39.831191 139874413795200 efficientnet_model.py:148] round_filter input=40 output=40
T2025 00:16:20 021251 12007112705200 ~efficientnet model ...1101 round filter input=80 output=80
```

```
I1205 08:46:39.851554 139874413795200 efficientnet_model.py:140] round_filter input=0 output=0
I1205 08:46:40.230275 139874413795200 efficientnet_model.py:148] round_filter input=80 output=80
I1205 08:46:40.230445 139874413795200 efficientnet_model.py:148] round_filter input=112 output=112
I1205 08:46:40.622503 139874413795200 efficientnet_model.py:148] round_filter input=112 output=112
I1205 08:46:40.622677 139874413795200 efficientnet_model.py:148] round_filter input=192 output=192
I1205 08:46:41.125831 139874413795200 efficientnet_model.py:148] round_filter input=192 output=192
I1205 08:46:41.126003 139874413795200 efficientnet_model.py:148] round_filter input=320 output=320
I1205 08:46:41.331703 139874413795200 efficientnet_model.py:148] round_filter input=1280
output=1280
I1205 08:46:41.368964 139874413795200 efficientnet_model.py:462] Building model efficientnet with
params ModelConfig(width_coefficient=1.0, depth_coefficient=1.1, resolution=240, dropout_rate=0.2,
blocks=(BlockConfig(input_filters=32, output_filters=16, kernel_size=3, num_repeat=1,
expand_ratio=1, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=16, output_filters=24, kernel_size=3,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=24, output_filters=40, kernel_size=5,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=40, output_filters=80, kernel_size=3,
num_repeat=3, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=80, output_filters=112, kernel_size=5,
num_repeat=3, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=112, output_filters=192, kernel_size=5,
num_repeat=4, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=192, output_filters=320, kernel_size=3,
num_repeat=1, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise')), stem_base_filters=32, top_base_filters=1280, activation='simple_swish', b
atch_norm='default', bn_momentum=0.99, bn_epsilon=0.001, weight_decay=5e-06,
drop_connect_rate=0.2, depth_divisor=8, min_depth=None, use_se=True, input_channels=3,
num_classes=1000, model_name='efficientnet', rescale_input=False, data_format='channels_last', dty
pe='float32')
I1205 08:46:41.460446 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:144]
EfficientDet EfficientNet backbone version: efficientnet-b2
I1205 08:46:41.460587 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:145]
EfficientDet BiFPN num filters: 112
I1205 08:46:41.460657 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:147]
EfficientDet BiFPN num iterations: 5
I1205 08:46:41.465978 139874413795200 efficientnet_model.py:148] round_filter input=32 output=32
I1205 08:46:41.487140 139874413795200 efficientnet_model.py:148] round_filter input=32 output=32
I1205 08:46:41.487251 139874413795200 efficientnet_model.py:148] round_filter input=16 output=16
I1205 08:46:41.784030 139874413795200 efficientnet_model.py:148] round_filter input=16 output=16
I1205 08:46:41.784220 139874413795200 efficientnet_model.py:148] round_filter input=24 output=24
I1205 08:46:42.081734 139874413795200 efficientnet_model.py:148] round_filter input=24 output=24
I1205 08:46:42.081897 139874413795200 efficientnet_model.py:148] round_filter input=40 output=48
I1205 08:46:42.386971 139874413795200 efficientnet_model.py:148] round_filter input=40 output=48
I1205 08:46:42.387151 139874413795200 efficientnet_model.py:148] round_filter input=80 output=88
I1205 08:46:42.779920 139874413795200 efficientnet_model.py:148] round_filter input=80 output=88
I1205 08:46:42.780090 139874413795200 efficientnet_model.py:148] round_filter input=112 output=120
I1205 08:46:43.167779 139874413795200 efficientnet_model.py:148] round_filter input=112 output=120
I1205 08:46:43.167943 139874413795200 efficientnet_model.py:148] round_filter input=192 output=208
I1205 08:46:43.674760 139874413795200 efficientnet_model.py:148] round_filter input=192 output=208
I1205 08:46:43.674933 139874413795200 efficientnet_model.py:148] round_filter input=320 output=352
I1205 08:46:43.859467 139874413795200 efficientnet_model.py:148] round_filter input=1280
output=1408
I1205 08:46:43.895150 139874413795200 efficientnet_model.py:462] Building model efficientnet with
params ModelConfig(width_coefficient=1.1, depth_coefficient=1.2, resolution=260, dropout_rate=0.3,
blocks=(BlockConfig(input_filters=32, output_filters=16, kernel_size=3, num_repeat=1,
expand_ratio=1, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=16, output_filters=24, kernel_size=3,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=24, output_filters=40, kernel_size=5,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=40, output_filters=80, kernel_size=3,
num_repeat=3, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=80, output_filters=112, kernel_size=5,
num_repeat=3, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=112, output_filters=192, kernel_size=5,
num_repeat=4, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=192, output_filters=320, kernel_size=3,
num_repeat=1, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise')), stem_base_filters=32, top_base_filters=1280, activation='simple_swish', b
atch_norm='default', bn_momentum=0.99, bn_epsilon=0.001, weight_decay=5e-06,
drop_connect_rate=0.2, depth_divisor=8, min_depth=None, use_se=True, input_channels=3,
num_classes=1000, model_name='efficientnet', rescale_input=False, data_format='channels_last', dty
pe='float32')
I1205 08:46:43.988295 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:144]
EfficientDet EfficientNet backbone version: efficientnet-b3
I1205 08:46:43.988446 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:145]
```

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EfficientDet BiFPN num filters: 160
I1205 08:46:43.988521 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:147]
EfficientDet BiFPN num iterations: 6
I1205 08:46:43.993657 139874413795200 efficientnet_model.py:148] round_filter input=32 output=40
I1205 08:46:44.017849 139874413795200 efficientnet_model.py:148] round_filter input=32 output=40
I1205 08:46:44.017973 139874413795200 efficientnet_model.py:148] round_filter input=16 output=24
I1205 08:46:44.165873 139874413795200 efficientnet_model.py:148] round_filter input=16 output=24
I1205 08:46:44.166028 139874413795200 efficientnet_model.py:148] round_filter input=24 output=32
I1205 08:46:44.459275 139874413795200 efficientnet_model.py:148] round_filter input=24 output=32
I1205 08:46:44.459437 139874413795200 efficientnet_model.py:148] round_filter input=40 output=48
I1205 08:46:44.738604 139874413795200 efficientnet_model.py:148] round_filter input=40 output=48
I1205 08:46:44.738772 139874413795200 efficientnet_model.py:148] round_filter input=80 output=96
I1205 08:46:45.237187 139874413795200 efficientnet_model.py:148] round_filter input=80 output=96
I1205 08:46:45.237390 139874413795200 efficientnet_model.py:148] round_filter input=112 output=136
I1205 08:46:45.926744 139874413795200 efficientnet_model.py:148] round_filter input=112 output=136
I1205 08:46:45.926940 139874413795200 efficientnet_model.py:148] round_filter input=192 output=232
I1205 08:46:46.515681 139874413795200 efficientnet_model.py:148] round_filter input=192 output=232
I1205 08:46:46.515858 139874413795200 efficientnet_model.py:148] round_filter input=320 output=384
I1205 08:46:46.710433 139874413795200 efficientnet_model.py:148] round_filter input=1280
output=1536
I1205 08:46:46.746894 139874413795200 efficientnet_model.py:462] Building model efficientnet with
params ModelConfig(width_coefficient=1.2, depth_coefficient=1.4, resolution=300, dropout_rate=0.3,
blocks=(BlockConfig(input_filters=32, output_filters=16, kernel_size=3, num_repeat=1,
expand_ratio=1, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=16, output_filters=24, kernel_size=3,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=24, output_filters=40, kernel_size=5,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=40, output_filters=80, kernel_size=3,
num_repeat=3, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=80, output_filters=112, kernel_size=5,
num_repeat=3, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=112, output_filters=192, kernel_size=5,
num_repeat=4, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=192, output_filters=320, kernel_size=3,
num_repeat=1, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise')), stem_base_filters=32, top_base_filters=1280, activation='simple_swish', batch_norm='default', bn_momentum=0.99, bn_epsilon=0.001, weight_decay=5e-06,
drop_connect_rate=0.2, depth_divisor=8, min_depth=None, use_se=True, input_channels=3,
num_classes=1000, model_name='efficientnet', rescale_input=False, data_format='channels_last', dtype='float32')
I1205 08:46:46.847863 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:144]
EfficientDet EfficientNet backbone version: efficientnet-b4
I1205 08:46:46.848020 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:145]
EfficientDet BiFPN num filters: 224
I1205 08:46:46.848093 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:147]
EfficientDet BiFPN num iterations: 7
I1205 08:46:46.853335 139874413795200 efficientnet_model.py:148] round_filter input=32 output=48
I1205 08:46:46.877037 139874413795200 efficientnet_model.py:148] round_filter input=32 output=48
I1205 08:46:46.877178 139874413795200 efficientnet_model.py:148] round_filter input=16 output=24
I1205 08:46:47.025350 139874413795200 efficientnet_model.py:148] round_filter input=16 output=24
I1205 08:46:47.025508 139874413795200 efficientnet_model.py:148] round_filter input=24 output=32
I1205 08:46:47.432746 139874413795200 efficientnet_model.py:148] round_filter input=24 output=32
I1205 08:46:47.432926 139874413795200 efficientnet_model.py:148] round_filter input=40 output=56
I1205 08:46:47.818426 139874413795200 efficientnet_model.py:148] round_filter input=40 output=56
I1205 08:46:47.818589 139874413795200 efficientnet_model.py:148] round_filter input=80 output=112
I1205 08:46:48.427453 139874413795200 efficientnet_model.py:148] round_filter input=80 output=112
I1205 08:46:48.427622 139874413795200 efficientnet_model.py:148] round_filter input=112 output=160
I1205 08:46:49.013526 139874413795200 efficientnet_model.py:148] round_filter input=112 output=160
I1205 08:46:49.013714 139874413795200 efficientnet_model.py:148] round_filter input=192 output=272
I1205 08:46:49.819980 139874413795200 efficientnet_model.py:148] round_filter input=192 output=272
I1205 08:46:49.820164 139874413795200 efficientnet_model.py:148] round_filter input=320 output=448
I1205 08:46:50.009802 139874413795200 efficientnet_model.py:148] round_filter input=1280
output=1792
I1205 08:46:50.047622 139874413795200 efficientnet_model.py:462] Building model efficientnet with
params ModelConfig(width_coefficient=1.4, depth_coefficient=1.8, resolution=380, dropout_rate=0.4,
blocks=(BlockConfig(input_filters=32, output_filters=16, kernel_size=3, num_repeat=1,
expand_ratio=1, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=16, output_filters=24, kernel_size=3,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=24, output_filters=40, kernel_size=5,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=40, output_filters=80, kernel_size=3,
num_repeat=3, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=80, output_filters=112, kernel_size=5,
num_repeat=3, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=112, output_filters=192, kernel_size=5,
```

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num_repeat=4, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=192, output_filters=320, kernel_size=3,
num_repeat=1, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise')), stem_base_filters=32, top_base_filters=1280, activation='simple_swish', batch_norm='default', bn_momentum=0.99, bn_epsilon=0.001, weight_decay=5e-06,
drop_connect_rate=0.2, depth_divisor=8, min_depth=None, use_se=True, input_channels=3,
num_classes=1000, model_name='efficientnet', rescale_input=False, data_format='channels_last', dtype='float32')
I1205 08:46:50.161988 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:144]
EfficientDet EfficientNet backbone version: efficientnet-b5
I1205 08:46:50.162150 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:145]
EfficientDet BiFPN num filters: 288
I1205 08:46:50.162226 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:147]
EfficientDet BiFPN num iterations: 7
I1205 08:46:50.167533 139874413795200 efficientnet_model.py:148] round_filter input=32 output=48
I1205 08:46:50.189527 139874413795200 efficientnet_model.py:148] round_filter input=32 output=48
I1205 08:46:50.189650 139874413795200 efficientnet_model.py:148] round_filter input=16 output=24
I1205 08:46:50.658021 139874413795200 efficientnet_model.py:148] round_filter input=16 output=24
I1205 08:46:50.658205 139874413795200 efficientnet_model.py:148] round_filter input=24 output=40
I1205 08:46:51.153390 139874413795200 efficientnet_model.py:148] round_filter input=24 output=40
I1205 08:46:51.153556 139874413795200 efficientnet_model.py:148] round_filter input=40 output=64
I1205 08:46:51.636101 139874413795200 efficientnet_model.py:148] round_filter input=40 output=64
I1205 08:46:51.636284 139874413795200 efficientnet_model.py:148] round_filter input=80 output=128
I1205 08:46:52.316804 139874413795200 efficientnet_model.py:148] round_filter input=80 output=128
I1205 08:46:52.316979 139874413795200 efficientnet_model.py:148] round_filter input=112 output=176
I1205 08:46:52.997196 139874413795200 efficientnet_model.py:148] round_filter input=112 output=176
I1205 08:46:52.997362 139874413795200 efficientnet_model.py:148] round_filter input=192 output=304
I1205 08:46:53.886546 139874413795200 efficientnet_model.py:148] round_filter input=192 output=304
I1205 08:46:53.886724 139874413795200 efficientnet_model.py:148] round_filter input=320 output=512
I1205 08:46:54.183095 139874413795200 efficientnet_model.py:148] round_filter input=1280
output=2048
I1205 08:46:54.219677 139874413795200 efficientnet_model.py:462] Building model efficientnet with
params ModelConfig(width_coefficient=1.6, depth_coefficient=2.2, resolution=456, dropout_rate=0.4,
blocks=(BlockConfig(input_filters=32, output_filters=16, kernel_size=3, num_repeat=1,
expand_ratio=1, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=16, output_filters=24, kernel_size=3,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=24, output_filters=40, kernel_size=5,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=40, output_filters=80, kernel_size=3,
num_repeat=3, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=80, output_filters=112, kernel_size=5,
num_repeat=3, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=112, output_filters=192, kernel_size=5,
num_repeat=4, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=192, output_filters=320, kernel_size=3,
num_repeat=1, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise')), stem_base_filters=32, top_base_filters=1280, activation='simple_swish', batch_norm='default', bn_momentum=0.99, bn_epsilon=0.001, weight_decay=5e-06,
drop_connect_rate=0.2, depth_divisor=8, min_depth=None, use_se=True, input_channels=3,
num_classes=1000, model_name='efficientnet', rescale_input=False, data_format='channels_last', dtype='float32')
I1205 08:46:54.342970 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:144]
EfficientDet EfficientNet backbone version: efficientnet-b6
I1205 08:46:54.343137 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:145]
EfficientDet BiFPN num filters: 384
I1205 08:46:54.343214 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:147]
EfficientDet BiFPN num iterations: 8
I1205 08:46:54.349086 139874413795200 efficientnet_model.py:148] round_filter input=32 output=56
I1205 08:46:54.374413 139874413795200 efficientnet_model.py:148] round_filter input=32 output=56
I1205 08:46:54.374533 139874413795200 efficientnet_model.py:148] round_filter input=16 output=32
I1205 08:46:54.605599 139874413795200 efficientnet_model.py:148] round_filter input=16 output=32
I1205 08:46:54.605744 139874413795200 efficientnet_model.py:148] round_filter input=24 output=40
I1205 08:46:55.200060 139874413795200 efficientnet_model.py:148] round_filter input=24 output=40
I1205 08:46:55.200253 139874413795200 efficientnet_model.py:148] round_filter input=40 output=72
I1205 08:46:55.800256 139874413795200 efficientnet_model.py:148] round_filter input=40 output=72
I1205 08:46:55.800419 139874413795200 efficientnet_model.py:148] round_filter input=80 output=144
I1205 08:46:56.886461 139874413795200 efficientnet_model.py:148] round_filter input=80 output=144
I1205 08:46:56.886638 139874413795200 efficientnet_model.py:148] round_filter input=112 output=200
I1205 08:46:57.681672 139874413795200 efficientnet_model.py:148] round_filter input=112 output=200
I1205 08:46:57.681847 139874413795200 efficientnet_model.py:148] round_filter input=192 output=344
I1205 08:46:58.792060 139874413795200 efficientnet_model.py:148] round_filter input=192 output=344
I1205 08:46:58.792245 139874413795200 efficientnet_model.py:148] round_filter input=320 output=576
I1205 08:46:59.082242 139874413795200 efficientnet_model.py:148] round_filter input=1280
output=2304
I1205 08:46:59.118561 139874413795200 efficientnet_model.py:462] Building model efficientnet with
params ModelConfig(width_coefficient=1.8, depth_coefficient=2.6, resolution=528, dropout_rate=0.5,
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blocks=(BlockConfig(input_filters=32, output_filters=16, kernel_size=3, num_repeat=1,
expand_ratio=1, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=16, output_filters=24, kernel_size=3,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=24, output_filters=40, kernel_size=5,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=40, output_filters=80, kernel_size=3,
num_repeat=3, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=80, output_filters=112, kernel_size=5,
num_repeat=3, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=112, output_filters=192, kernel_size=5,
num_repeat=4, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=192, output_filters=320, kernel_size=3,
num_repeat=1, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise')), stem_base_filters=32, top_base_filters=1280, activation='simple_swish', batch_norm='default', bn_momentum=0.99, bn_epsilon=0.001, weight_decay=5e-06,
drop_connect_rate=0.2, depth_divisor=8, min_depth=None, use_se=True, input_channels=3,
num_classes=1000, model_name='efficientnet', rescale_input=False, data_format='channels_last', dtype='float32')
I1205 08:46:59.257569 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:144]
EfficientDet EfficientNet backbone version: efficientnet-b7
I1205 08:46:59.257730 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:145]
EfficientDet BiFPN num filters: 384
I1205 08:46:59.257805 139874413795200 ssd_efficientnet_bifpn_feature_extractor.py:147]
EfficientDet BiFPN num iterations: 8
I1205 08:46:59.262940 139874413795200 efficientnet_model.py:148] round_filter input=32 output=64
I1205 08:46:59.284966 139874413795200 efficientnet_model.py:148] round_filter input=32 output=64
I1205 08:46:59.285086 139874413795200 efficientnet_model.py:148] round_filter input=16 output=32
I1205 08:46:59.598381 139874413795200 efficientnet_model.py:148] round_filter input=16 output=32
I1205 08:46:59.598579 139874413795200 efficientnet_model.py:148] round_filter input=24 output=48
I1205 08:47:00.283510 139874413795200 efficientnet_model.py:148] round_filter input=24 output=48
I1205 08:47:00.283677 139874413795200 efficientnet_model.py:148] round_filter input=40 output=80
I1205 08:47:00.969455 139874413795200 efficientnet_model.py:148] round_filter input=40 output=80
I1205 08:47:00.969619 139874413795200 efficientnet_model.py:148] round_filter input=80 output=160
I1205 08:47:01.966844 139874413795200 efficientnet_model.py:148] round_filter input=80 output=160
I1205 08:47:01.967014 139874413795200 efficientnet_model.py:148] round_filter input=112 output=224
I1205 08:47:02.953543 139874413795200 efficientnet_model.py:148] round_filter input=112 output=224
I1205 08:47:02.953754 139874413795200 efficientnet_model.py:148] round_filter input=192 output=384
I1205 08:47:04.597429 139874413795200 efficientnet_model.py:148] round_filter input=192 output=384
I1205 08:47:04.597610 139874413795200 efficientnet_model.py:148] round_filter input=320 output=640
I1205 08:47:04.989039 139874413795200 efficientnet_model.py:148] round_filter input=1280
output=2560
I1205 08:47:05.028051 139874413795200 efficientnet_model.py:462] Building model efficientnet with
params ModelConfig(width_coefficient=2.0, depth_coefficient=3.1, resolution=600, dropout_rate=0.5,
blocks=(BlockConfig(input_filters=32, output_filters=16, kernel_size=3, num_repeat=1,
expand_ratio=1, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=16, output_filters=24, kernel_size=3,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=24, output_filters=40, kernel_size=5,
num_repeat=2, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=40, output_filters=80, kernel_size=3,
num_repeat=3, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=80, output_filters=112, kernel_size=5,
num_repeat=3, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=112, output_filters=192, kernel_size=5,
num_repeat=4, expand_ratio=6, strides=(2, 2), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise'), BlockConfig(input_filters=192, output_filters=320, kernel_size=3,
num_repeat=1, expand_ratio=6, strides=(1, 1), se_ratio=0.25, id_skip=True, fused_conv=False,
conv_type='depthwise')), stem_base_filters=32, top_base_filters=1280, activation='simple_swish', batch_norm='default', bn_momentum=0.99, bn_epsilon=0.001, weight_decay=5e-06,
drop_connect_rate=0.2, depth_divisor=8, min_depth=None, use_se=True, input_channels=3,
num_classes=1000, model_name='efficientnet', rescale_input=False, data_format='channels_last', dtype='float32')
INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_create_ssd_models_from_config): 28.22s
I1205 08:47:05.185164 139874413795200 test_util.py:1973]
time(__main__.ModelBuilderTF2Test.test_create_ssd_models_from_config): 28.22s
[ OK ] ModelBuilderTF2Test.test_create_ssd_models_from_config
[ RUN      ] ModelBuilderTF2Test.test_invalid_faster_rcnn_batchnorm_update
INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_invalid_faster_rcnn_batchnorm_update): 0.0s
I1205 08:47:05.192932 139874413795200 test_util.py:1973]
time(__main__.ModelBuilderTF2Test.test_invalid_faster_rcnn_batchnorm_update): 0.0s
[ OK ] ModelBuilderTF2Test.test_invalid_faster_rcnn_batchnorm_update
[ RUN      ] ModelBuilderTF2Test.test_invalid_first_stage_nms_iou_threshold
INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_invalid_first_stage_nms_iou_threshold): 0.0s
I1205 08:47:05.194926 139874413795200 test_util.py:1973]
time(__main__.ModelBuilderTF2Test.test_invalid_first_stage_nms_iou_threshold): 0.0s
```

```
[      OK ] ModelBuilderTF2Test.test_invalid_first_stage_nms_iou_threshold
[ RUN      ] ModelBuilderTF2Test.test_invalid_model_config_proto
INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_invalid_model_config_proto): 0.0s
I1205 08:47:05.195628 139874413795200 test_util.py:1973]
time(__main__.ModelBuilderTF2Test.test_invalid_model_config_proto): 0.0s
[      OK ] ModelBuilderTF2Test.test_invalid_model_config_proto
[ RUN      ] ModelBuilderTF2Test.test_invalid_second_stage_batch_size
INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_invalid_second_stage_batch_size): 0.0s
I1205 08:47:05.197194 139874413795200 test_util.py:1973]
time(__main__.ModelBuilderTF2Test.test_invalid_second_stage_batch_size): 0.0s
[      OK ] ModelBuilderTF2Test.test_invalid_second_stage_batch_size
[ RUN      ] ModelBuilderTF2Test.test_session
[ SKIPPED ] ModelBuilderTF2Test.test_session
[ RUN      ] ModelBuilderTF2Test.test_unknown_faster_rcnn_feature_extractor
INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_unknown_faster_rcnn_feature_extractor): 0.0s
I1205 08:47:05.199036 139874413795200 test_util.py:1973]
time(__main__.ModelBuilderTF2Test.test_unknown_faster_rcnn_feature_extractor): 0.0s
[      OK ] ModelBuilderTF2Test.test_unknown_faster_rcnn_feature_extractor
[ RUN      ] ModelBuilderTF2Test.test_unknown_meta_architecture
INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_unknown_meta_architecture): 0.0s
I1205 08:47:05.199710 139874413795200 test_util.py:1973]
time(__main__.ModelBuilderTF2Test.test_unknown_meta_architecture): 0.0s
[      OK ] ModelBuilderTF2Test.test_unknown_meta_architecture
[ RUN      ] ModelBuilderTF2Test.test_unknown_ssd_feature_extractor
INFO:tensorflow:time(__main__.ModelBuilderTF2Test.test_unknown_ssd_feature_extractor): 0.0s
I1205 08:47:05.200826 139874413795200 test_util.py:1973]
time(__main__.ModelBuilderTF2Test.test_unknown_ssd_feature_extractor): 0.0s
[      OK ] ModelBuilderTF2Test.test_unknown_ssd_feature_extractor
-----
```

Ran 20 tests in 39.022s

OK (skipped=1)

In []:

```
#removing data folder in models/research/object_detection folder
!rm -rf /content/models/research/object_detection/data
```

In []:

```
#copy our own created data folder in that folder
!cp -r /content/content/data /content/models/research/object_detection/
```

In []:

```
import tensorflow as tf
if tf.test.gpu_device_name():
    print('Default GPU Device: {}'.format(tf.test.gpu_device_name()))
else:
    print("Please install GPU version of TF")

gpus = tf.config.experimental.list_physical_devices('GPU')
for gpu in gpus:
    tf.config.experimental.set_memory_growth(gpu, True)
```

Default GPU Device: /device:GPU:0

In []:

```
#!rm -rf /content/drive/MyDrive/object_detection/mobile_ner_v2_fpnlite_640x640/training_logs2
```

In []:

```
#!mkdir /content/drive/MyDrive/object_detection/mobile_ner_v2_fpnlite_640x640/training_logs2
```

1. Training Model:

In []:

```
PIPELINE_CONFIG_PATH='/content/faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8/pipeline.config'
MODEL_DIR='/content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/training_1c
NUM_TRAIN_STEPS=25000
SAMPLE_1_OF_N_EVAL_EXAMPLES=1
```

```
!python /content/models/research/object_detection/model_main_tf2.py \
--model_dir=$MODEL_DIR \
--num_train_steps=$NUM_TRAIN_STEPS \
--sample_1_of_n_eval_examples=$SAMPLE_1_OF_N_EVAL_EXAMPLES \
--pipeline_config_path=$PIPELINE_CONFIG_PATH \
--alsologtosterr
```

```
2020-12-01 07:14:36.779915: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcuda.so.10.1
2020-12-01 07:14:41.217969: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcuda.so.1
2020-12-01 07:14:41.222782: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so returning NUMA node zero
2020-12-01 07:14:41.223353: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1716] Found device 0 with properties:
pciBusID: 0000:00:04.0 name: Tesla T4 computeCapability: 7.5
coreClock: 1.59GHz coreCount: 40 deviceMemorySize: 14.73GiB deviceMemoryBandwidth: 298.08GiB/s
2020-12-01 07:14:41.223392: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcuda.so.10.1
2020-12-01 07:14:41.224829: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcublas.so.10
2020-12-01 07:14:41.232514: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcufft.so.10
2020-12-01 07:14:41.232922: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcurand.so.10
2020-12-01 07:14:41.243347: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcusolver.so.10
2020-12-01 07:14:41.244309: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcusparse.so.10
2020-12-01 07:14:41.256139: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcudnn.so.7
2020-12-01 07:14:41.256276: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so returning NUMA node zero
2020-12-01 07:14:41.256948: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so returning NUMA node zero
2020-12-01 07:14:41.257508: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1858] Adding visible gpu devices: 0
2020-12-01 07:14:41.272521: I tensorflow/core/platform/profile_utils/cpu_utils.cc:104] CPU Frequency: 2200000000 Hz
2020-12-01 07:14:41.272747: I tensorflow/compiler/xla/service/service.cc:168] XLA service 0x1ecf100 initialized for platform Host (this does not guarantee that XLA will be used). Devices: 2020-12-01 07:14:41.272777: I tensorflow/compiler/xla/service/service.cc:176] StreamExecutor device (0): Host, Default Version
2020-12-01 07:14:41.375173: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so returning NUMA node zero
2020-12-01 07:14:41.376011: I tensorflow/compiler/xla/service/service.cc:168] XLA service 0x1ecef40 initialized for platform CUDA (this does not guarantee that XLA will be used). Devices: 2020-12-01 07:14:41.376050: I tensorflow/compiler/xla/service/service.cc:176] StreamExecutor device (0): Tesla T4, Compute Capability 7.5
2020-12-01 07:14:41.376233: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so returning NUMA node zero
2020-12-01 07:14:41.376857: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1716] Found device 0 with properties:
pciBusID: 0000:00:04.0 name: Tesla T4 computeCapability: 7.5
coreClock: 1.59GHz coreCount: 40 deviceMemorySize: 14.73GiB deviceMemoryBandwidth: 298.08GiB/s
2020-12-01 07:14:41.376901: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcuda.so.10.1
2020-12-01 07:14:41.376958: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcublas.so.10
2020-12-01 07:14:41.376982: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcufft.so.10
```

```
successfully opened dynamic library libcurl.so.10
2020-12-01 07:14:41.377018: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcurand.so.10
2020-12-01 07:14:41.377038: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcusolver.so.10
2020-12-01 07:14:41.377057: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcusparse.so.10
2020-12-01 07:14:41.377077: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudnn.so.7
2020-12-01 07:14:41.377152: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-01 07:14:41.377706: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-01 07:14:41.378189: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1858] Adding
visible gpu devices: 0
2020-12-01 07:14:41.378232: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudart.so.10.1
2020-12-01 07:14:42.037231: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1257] Device
interconnect StreamExecutor with strength 1 edge matrix:
2020-12-01 07:14:42.037290: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1263]      0
2020-12-01 07:14:42.037303: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1276] 0:      N
2020-12-01 07:14:42.037505: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-01 07:14:42.038237: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-01 07:14:42.038796: W tensorflow/core/common_runtime/gpu/gpu_bfc_allocator.cc:39]
Overriding allow_growth setting because the TF_FORCE_GPU_ALLOW_GROWTH environment variable is set.
Original config value was 0.
2020-12-01 07:14:42.038840: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1402] Created
TensorFlow device (/job:localhost/replica:0/task:0/device:GPU:0 with 13758 MB memory) -> physical
GPU (device: 0, name: Tesla T4, pci bus id: 0000:00:04.0, compute capability: 7.5)
INFO:tensorflow:Using MirroredStrategy with devices
('/job:localhost/replica:0/task:0/device:GPU:0',)
I1201 07:14:42.049035 139756725102464 mirrored_strategy.py:341] Using MirroredStrategy with
devices ('/job:localhost/replica:0/task:0/device:GPU:0',)
INFO:tensorflow:Maybe overwriting train_steps: 25000
I1201 07:14:42.061878 139756725102464 config_util.py:552] Maybe overwriting train_steps: 25000
INFO:tensorflow:Maybe overwriting use_bfloat16: False
I1201 07:14:42.062039 139756725102464 config_util.py:552] Maybe overwriting use_bfloat16: False
INFO:tensorflow:Reading unweighted datasets:
['/content/models/research/object_detection/data/tf_record/train.record']
I1201 07:14:42.158855 139756725102464 dataset_builder.py:148] Reading unweighted datasets:
['/content/models/research/object_detection/data/tf_record/train.record']
INFO:tensorflow:Reading record datasets for input file:
['/content/models/research/object_detection/data/tf_record/train.record']
I1201 07:14:42.159527 139756725102464 dataset_builder.py:77] Reading record datasets for input fil
e: ['/content/models/research/object_detection/data/tf_record/train.record']
INFO:tensorflow:Number of filenames to read: 1
I1201 07:14:42.159681 139756725102464 dataset_builder.py:78] Number of filenames to read: 1
WARNING:tensorflow:num_readers has been reduced to 1 to match input file shards.
W1201 07:14:42.159803 139756725102464 dataset_builder.py:86] num_readers has been reduced to 1 to
match input file shards.
WARNING:tensorflow:From /content/models/research/object_detection/builders/dataset_builder.py:103:
parallel_interleave (from tensorflow.python.data.experimental.ops.interleave_ops) is deprecated
and will be removed in a future version.
Instructions for updating:
Use `tf.data.Dataset.interleave(map_func, cycle_length, block_length,
num_parallel_calls=tf.data.experimental.AUTOTUNE)` instead. If sloppy execution is desired, use `t
f.data.Options.experimental_deterministic`.
W1201 07:14:42.184251 139756725102464 deprecation.py:323] From
/content/models/research/object_detection/builders/dataset_builder.py:103: parallel_interleave (fr
om tensorflow.python.data.experimental.ops.interleave_ops) is deprecated and will be removed in a
future version.
Instructions for updating:
Use `tf.data.Dataset.interleave(map_func, cycle_length, block_length,
num_parallel_calls=tf.data.experimental.AUTOTUNE)` instead. If sloppy execution is desired, use `t
f.data.Options.experimental_deterministic`.
WARNING:tensorflow:From /content/models/research/object_detection/builders/dataset_builder.py:222:
DatasetV1.map_with_legacy_function (from tensorflow.python.data.ops.dataset_ops) is deprecated and
will be removed in a future version.
Instructions for updating:
Use `tf.data.Dataset.map()
W1201 07:14:42.343520 139756725102464 deprecation.py:323] From
'/content/models/research/object_detection/builders/dataset_builder.py:103: parallel_interleave (from tensorflow.python.data.experimental.ops.interleave_ops) is deprecated and will be removed in a future version.'
```

```
/content/models/research/object_detection/builders/dataset_builder.py:222:  
DatasetV1.map_with_legacy_function (from tensorflow.python.data.ops.dataset_ops) is deprecated and  
will be removed in a future version.  
Instructions for updating:  
Use `tf.data.Dataset.map()  
WARNING:tensorflow:From /usr/local/lib/python3.6/dist-  
packages/tensorflow/python/util/dispatch.py:201: sparse_to_dense (from  
tensorflow.python.ops.sparse_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Create a `tf.sparse.SparseTensor` and use `tf.sparse.to_dense` instead.  
W1201 07:14:48.947184 139756725102464 deprecation.py:323] From /usr/local/lib/python3.6/dist-  
packages/tensorflow/python/util/dispatch.py:201: sparse_to_dense (from  
tensorflow.python.ops.sparse_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Create a `tf.sparse.SparseTensor` and use `tf.sparse.to_dense` instead.  
WARNING:tensorflow:From /content/models/research/object_detection/inputs.py:281: to_float (from te-  
nsorflow.python.ops.math_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Use `tf.cast` instead.  
W1201 07:14:53.427429 139756725102464 deprecation.py:323] From  
/content/models/research/object_detection/inputs.py:281: to_float (from  
tensorflow.python.ops.math_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Use `tf.cast` instead.  
WARNING:tensorflow:From /content/models/research/object_detection/model_lib_v2.py:349:  
set_learning_phase (from tensorflow.python.keras.backend) is deprecated and will be removed after  
2020-10-11.  
Instructions for updating:  
Simply pass a True/False value to the `training` argument of the `__call__` method of your layer o-  
r model.  
W1201 07:14:58.570792 139753287264000 deprecation.py:323] From  
/content/models/research/object_detection/model_lib_v2.py:349: set_learning_phase (from  
tensorflow.python.keras.backend) is deprecated and will be removed after 2020-10-11.  
Instructions for updating:  
Simply pass a True/False value to the `training` argument of the `__call__` method of your layer o-  
r model.  
INFO:tensorflow:depth of additional conv before box predictor: 0  
I1201 07:15:07.631342 139753287264000 convolutional_keras_box_predictor.py:154] depth of  
additional conv before box predictor: 0  
WARNING:tensorflow:From /content/models/research/object_detection/utils/model_util.py:57:  
Tensor.experimental_ref (from tensorflow.python.framework.ops) is deprecated and will be removed i-  
n a future version.  
Instructions for updating:  
Use ref() instead.  
W1201 07:15:14.850027 139753287264000 deprecation.py:323] From  
/content/models/research/object_detection/utils/model_util.py:57: Tensor.experimental_ref (from  
tensorflow.python.framework.ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Use ref() instead.  
WARNING:tensorflow:From /usr/local/lib/python3.6/dist-  
packages/tensorflow/python/util/dispatch.py:201: softmax_cross_entropy_with_logits (from  
tensorflow.python.ops.nn_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Future major versions of TensorFlow will allow gradients to flow  
into the labels input on backprop by default.  
See `tf.nn.softmax_cross_entropy_with_logits_v2`.  
W1201 07:15:20.581422 139753287264000 deprecation.py:323] From /usr/local/lib/python3.6/dist-  
packages/tensorflow/python/util/dispatch.py:201: softmax_cross_entropy_with_logits (from  
tensorflow.python.ops.nn_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Future major versions of TensorFlow will allow gradients to flow  
into the labels input on backprop by default.  
See `tf.nn.softmax_cross_entropy_with_logits_v2`.  
2020-12-01 07:15:39.258591: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]  
Successfully opened dynamic library libcublas.so.10  
2020-12-01 07:15:40.725037: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]  
Successfully opened dynamic library libcudnn.so.7  
2020-12-01 07:15:47.301881: W tensorflow/core/common_runtime/bfc_allocator.cc:312] Garbage  
collection: deallocate free memory regions (i.e., allocations) so that we can re-allocate a larger  
region to avoid OOM due to memory fragmentation. If you see this message frequently, you are runni-  
ng near the threshold of the available device memory and re-allocation may incur great performance
```

overhead. You may try smaller batch sizes to observe the performance impact. Set TF_ENABLE_GPU_GARBAGE_COLLECTION=false if you'd like to disable this feature.

WARNING:tensorflow:Unresolved object in checkpoint: (root).optimizer

W1201 07:16:06.889020 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).optimizer

WARNING:tensorflow:Unresolved object in checkpoint: (root).step

W1201 07:16:06.889405 139756725102464 util.py:150] Unresolved object in checkpoint: (root).step

WARNING:tensorflow:Unresolved object in checkpoint: (root).model._groundtruth_lists

W1201 07:16:06.889496 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._groundtruth_lists

WARNING:tensorflow:Unresolved object in checkpoint:
(root).model._first_stage_box_predictor_first_conv

W1201 07:16:06.889572 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._first_stage_box_predictor_first_conv

WARNING:tensorflow:Unresolved object in checkpoint: (root).model._first_stage_box_predictor

W1201 07:16:06.889642 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._first_stage_box_predictor

WARNING:tensorflow:Unresolved object in checkpoint: (root).model._maxpool_layer

W1201 07:16:06.889723 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._maxpool_layer

WARNING:tensorflow:Unresolved object in checkpoint: (root).model._mask_rcnn_box_predictor

W1201 07:16:06.889790 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._mask_rcnn_box_predictor

WARNING:tensorflow:Unresolved object in checkpoint: (root).model._batched_prediction_tensor_names

W1201 07:16:06.889853 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._batched_prediction_tensor_names

WARNING:tensorflow:Unresolved object in checkpoint: (root).model.endpoints

W1201 07:16:06.889917 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model.endpoints

WARNING:tensorflow:Unresolved object in checkpoint: (root).optimizer.iter

W1201 07:16:06.889980 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).optimizer.iter

WARNING:tensorflow:Unresolved object in checkpoint: (root).optimizer.decay

W1201 07:16:06.890050 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).optimizer.decay

WARNING:tensorflow:Unresolved object in checkpoint: (root).optimizer.momentum

W1201 07:16:06.890113 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).optimizer.momentum

WARNING:tensorflow:Unresolved object in checkpoint: (root).model._groundtruth_lists.boxes

W1201 07:16:06.890175 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._groundtruth_lists.boxes

WARNING:tensorflow:Unresolved object in checkpoint: (root).model._groundtruth_lists.classes

W1201 07:16:06.890237 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._groundtruth_lists.classes

WARNING:tensorflow:Unresolved object in checkpoint: (root).model._groundtruth_lists.weights

W1201 07:16:06.890298 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._groundtruth_lists.weights

WARNING:tensorflow:Unresolved object in checkpoint: (root).model._groundtruth_lists.confidences

W1201 07:16:06.890386 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._groundtruth_lists.confidences

WARNING:tensorflow:Unresolved object in checkpoint: (root).model._groundtruth_lists.is_crowd

W1201 07:16:06.890458 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._groundtruth_lists.is_crowd

WARNING:tensorflow:Unresolved object in checkpoint: (root).model._groundtruth_lists.group_of

W1201 07:16:06.890516 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._groundtruth_lists.group_of

WARNING:tensorflow:Unresolved object in checkpoint:
(root).model._groundtruth_lists.groundtruth_area

W1201 07:16:06.890575 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._groundtruth_lists.groundtruth_area

WARNING:tensorflow:Unresolved object in checkpoint:

(root).model._groundtruth_lists.groundtruth_verified_neg_classes

W1201 07:16:06.890633 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._groundtruth_lists.groundtruth_verified_neg_classes

WARNING:tensorflow:Unresolved object in checkpoint:

(root).model._groundtruth_lists.groundtruth_not_exhaustive_classes

W1201 07:16:06.890702 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._groundtruth_lists.groundtruth_not_exhaustive_classes

WARNING:tensorflow:Unresolved object in checkpoint:

(root).model._first_stage_box_predictor_first_conv.layer_with_weights-0

W1201 07:16:06.890762 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._first_stage_box_predictor_first_conv.layer_with_weights-0

WARNING:tensorflow:Unresolved object in checkpoint:

(root).model._first_stage_box_predictor_first_conv.layer-1

W1201 07:16:06.890822 139756725102464 util.py:150] Unresolved object in checkpoint:
(root).model._first_stage_box_predictor_first_conv.layer-1

WARNING:tensorflow:Unresolved object in checkpoint:

```
(root) .model._first_stage_box_predictor._first_conv.layer-2
W1201 07:16:06.890880 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._first_conv.layer-2
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._prediction_heads
W1201 07:16:06.890938 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._prediction_heads
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._sorted_head_names
W1201 07:16:06.891001 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._sorted_head_names
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._shared_nets
W1201 07:16:06.891060 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._shared_nets
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._mask_rcnn_box_predictor._box_prediction_head
W1201 07:16:06.891119 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._mask_rcnn_box_predictor._box_prediction_head
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._mask_rcnn_box_predictor._class_prediction_head
W1201 07:16:06.891179 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._mask_rcnn_box_predictor._class_prediction_head
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._mask_rcnn_box_predictor._third_stage_heads
W1201 07:16:06.891236 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._mask_rcnn_box_predictor._third_stage_heads
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._first_conv.layer_with_weights-0._inbound_nodes
W1201 07:16:06.891388 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._first_conv.layer_with_weights-0._inbound_nodes
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._first_conv.layer_with_weights-0.kernel
W1201 07:16:06.891457 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._first_conv.layer_with_weights-0.kernel
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._first_conv.layer_with_weights-0.bias
W1201 07:16:06.891523 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._first_conv.layer_with_weights-0.bias
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._first_conv.layer-1._inbound_nodes
W1201 07:16:06.891587 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._first_conv.layer-1._inbound_nodes
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._first_conv.layer-2._inbound_nodes
W1201 07:16:06.891650 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._first_conv.layer-2._inbound_nodes
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._prediction_heads.box_encodings
W1201 07:16:06.891730 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._prediction_heads.box_encodings
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._prediction_heads.class_predictions_with_background
W1201 07:16:06.891806 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._prediction_heads.class_predictions_with_background
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._shared_nets.0
W1201 07:16:06.891865 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._shared_nets.0
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._mask_rcnn_box_predictor._box_prediction_head._box_encoder_layers
W1201 07:16:06.891924 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._mask_rcnn_box_predictor._box_prediction_head._box_encoder_layers
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._mask_rcnn_box_predictor._class_prediction_head._class_predictor_layers
W1201 07:16:06.891982 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._mask_rcnn_box_predictor._class_prediction_head._class_predictor_layers
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._prediction_heads.box_encodings.0
W1201 07:16:06.892210 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._prediction_heads.box_encodings.0
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._prediction_heads.class_predictions_with_background.0
W1201 07:16:06.892280 139756725102464 util.py:150] Unresolved object in checkpoint:
(root) .model._first_stage_box_predictor._prediction_heads.class_predictions_with_background.0
WARNING:tensorflow:Unresolved object in checkpoint:
(root) .model._mask_rcnn_box_predictor._box_prediction_head._box_encoder_layers.0
```



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W1201 07:16:07.274263 139756725102464 util.py:150] Unresolved object in checkpoint:  
(root).optimizer's state 'momentum' for  
(root).model._mask_rcnn_box_predictor._box_prediction_head._box_encoder_layers.1.bias  
WARNING:tensorflow:Unresolved object in checkpoint: (root).optimizer's state 'momentum' for  
(root).model._mask_rcnn_box_predictor._class_prediction_head._class_predictor_layers.1.kernel  
W1201 07:16:07.274329 139756725102464 util.py:150] Unresolved object in checkpoint:  
(root).optimizer's state 'momentum' for  
(root).model._mask_rcnn_box_predictor._class_prediction_head._class_predictor_layers.1.kernel  
WARNING:tensorflow:Unresolved object in checkpoint: (root).optimizer's state 'momentum' for  
(root).model._mask_rcnn_box_predictor._class_prediction_head._class_predictor_layers.1.bias  
W1201 07:16:07.274399 139756725102464 util.py:150] Unresolved object in checkpoint:  
(root).optimizer's state 'momentum' for  
(root).model._mask_rcnn_box_predictor._class_prediction_head._class_predictor_layers.1.bias  
WARNING:tensorflow:Unresolved object in checkpoint: (root).optimizer's state 'momentum' for  
(root).model._first_stage_box_predictor._prediction_heads.box_encodings.0._box_encoder_layers.0.ker  
  
W1201 07:16:07.274464 139756725102464 util.py:150] Unresolved object in checkpoint:  
(root).optimizer's state 'momentum' for  
(root).model._first_stage_box_predictor._prediction_heads.box_encodings.0._box_encoder_layers.0.ker  
  
WARNING:tensorflow:Unresolved object in checkpoint: (root).optimizer's state 'momentum' for  
(root).model._first_stage_box_predictor._prediction_heads.box_encodings.0._box_encoder_layers.0.bias  
  
W1201 07:16:07.274531 139756725102464 util.py:150] Unresolved object in checkpoint:  
(root).optimizer's state 'momentum' for  
(root).model._first_stage_box_predictor._prediction_heads.box_encodings.0._box_encoder_layers.0.bias  
  
WARNING:tensorflow:Unresolved object in checkpoint: (root).optimizer's state 'momentum' for  
(root).model._first_stage_box_predictor._prediction_heads.class_predictions_with_background.0._clas  
edictor_layers.0.kernel  
W1201 07:16:07.274597 139756725102464 util.py:150] Unresolved object in checkpoint:  
(root).optimizer's state 'momentum' for  
(root).model._first_stage_box_predictor._prediction_heads.class_predictions_with_background.0._clas  
edictor_layers.0.kernel  
WARNING:tensorflow:Unresolved object in checkpoint: (root).optimizer's state 'momentum' for  
(root).model._first_stage_box_predictor._prediction_heads.class_predictions_with_background.0._clas  
edictor_layers.0.bias  
W1201 07:16:07.274662 139756725102464 util.py:150] Unresolved object in checkpoint:  
(root).optimizer's state 'momentum' for  
(root).model._first_stage_box_predictor._prediction_heads.class_predictions_with_background.0._clas  
edictor_layers.0.bias  
WARNING:tensorflow:A checkpoint was restored (e.g. tf.train.Checkpoint.restore or  
tf.keras.Model.load_weights) but not all checkpointed values were used. See above for specific iss  
ues. Use expect_partial() on the load status object, e.g.  
tf.train.Checkpoint.restore(...).expect_partial(), to silence these warnings, or use  
assert_consumed() to make the check explicit. See  
https://www.tensorflow.org/guide/checkpoint#loading\_mechanics for details.  
W1201 07:16:07.274755 139756725102464 util.py:158] A checkpoint was restored (e.g.  
tf.train.Checkpoint.restore or tf.keras.Model.load_weights) but not all checkpointed values were u  
sed. See above for specific issues. Use expect_partial() on the load status object, e.g. tf.train.  
Checkpoint.restore(...).expect_partial(), to silence these warnings, or use assert_consumed() to m  
ake the check explicit. See https://www.tensorflow.org/guide/checkpoint#loading\_mechanics for data  
ils.  
2020-12-01 07:16:16.489630: W tensorflow/core/framework/cpu_allocator_impl.cc:81] Allocation of 20  
054016 exceeds 10% of free system memory.  
2020-12-01 07:16:29.905512: W tensorflow/core/framework/cpu_allocator_impl.cc:81] Allocation of 20  
054016 exceeds 10% of free system memory.  
WARNING:tensorflow:From /usr/local/lib/python3.6/dist-  
packages/tensorflow/python/util/deprecation.py:574: calling map_fn_v2 (from  
tensorflow.python.ops.map_fn) with dtype is deprecated and will be removed in a future version.  
Instructions for updating:  
Use fn_output_signature instead  
W1201 07:16:33.957746 139753323198208 deprecation.py:506] From /usr/local/lib/python3.6/dist-  
packages/tensorflow/python/util/deprecation.py:574: calling map_fn_v2 (from  
tensorflow.python.ops.map_fn) with dtype is deprecated and will be removed in a future version.  
Instructions for updating:  
Use fn_output_signature instead  
2020-12-01 07:16:59.433659: W tensorflow/core/framework/cpu_allocator_impl.cc:81] Allocation of 20  
054016 exceeds 10% of free system memory.  
2020-12-01 07:16:59.456173: W tensorflow/core/framework/cpu_allocator_impl.cc:81] Allocation of 20  
054016 exceeds 10% of free system memory.  
2020-12-01 07:16:59.853767: W tensorflow/core/framework/cpu_allocator_impl.cc:81] Allocation of 20  
054016 exceeds 10% of free system memory.  
INFO:tensorflow:Step 13100 per-step time 2.158s loss=0.523  
I1201 07:20:46.916724 139756725102464 model_lib_v2.py:651] Step 13100 per-step time 2.158s  
loss=0.523  
INFO:tensorflow:Step 13200 per-step time 2.177s loss=1.072
```

```
I1201 07:24:26.882967 139756725102464 model_lib_v2.py:651] Step 13200 per-step time 2.177s
loss=1.072
INFO:tensorflow:Step 13300 per-step time 2.208s loss=1.253
I1201 07:28:07.293141 139756725102464 model_lib_v2.py:651] Step 13300 per-step time 2.208s
loss=1.253
INFO:tensorflow:Step 13400 per-step time 2.197s loss=1.295
I1201 07:31:47.577485 139756725102464 model_lib_v2.py:651] Step 13400 per-step time 2.197s
loss=1.295
INFO:tensorflow:Step 13500 per-step time 2.217s loss=0.614
I1201 07:35:28.287333 139756725102464 model_lib_v2.py:651] Step 13500 per-step time 2.217s
loss=0.614
INFO:tensorflow:Step 13600 per-step time 2.190s loss=0.855
I1201 07:39:08.573013 139756725102464 model_lib_v2.py:651] Step 13600 per-step time 2.190s
loss=0.855
INFO:tensorflow:Step 13700 per-step time 2.155s loss=0.683
I1201 07:42:48.907970 139756725102464 model_lib_v2.py:651] Step 13700 per-step time 2.155s
loss=0.683
INFO:tensorflow:Step 13800 per-step time 2.247s loss=1.068
I1201 07:46:29.335711 139756725102464 model_lib_v2.py:651] Step 13800 per-step time 2.247s
loss=1.068
INFO:tensorflow:Step 13900 per-step time 2.159s loss=1.737
I1201 07:50:10.751114 139756725102464 model_lib_v2.py:651] Step 13900 per-step time 2.159s
loss=1.737
INFO:tensorflow:Step 14000 per-step time 2.187s loss=0.994
I1201 07:53:50.989517 139756725102464 model_lib_v2.py:651] Step 14000 per-step time 2.187s
loss=0.994
INFO:tensorflow:Reduce to /job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
I1201 07:53:51.250706 139756725102464 cross_device_ops.py:443] Reduce to
/job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
INFO:tensorflow:Reduce to /job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
I1201 07:53:51.251916 139756725102464 cross_device_ops.py:443] Reduce to
/job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
INFO:tensorflow:Reduce to /job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
I1201 07:53:51.253557 139756725102464 cross_device_ops.py:443] Reduce to
/job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
INFO:tensorflow:Reduce to /job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
I1201 07:53:51.254341 139756725102464 cross_device_ops.py:443] Reduce to
/job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
INFO:tensorflow:Reduce to /job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
I1201 07:53:51.255674 139756725102464 cross_device_ops.py:443] Reduce to
/job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
INFO:tensorflow:Reduce to /job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
I1201 07:53:51.256426 139756725102464 cross_device_ops.py:443] Reduce to
/job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
INFO:tensorflow:Reduce to /job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
I1201 07:53:51.257805 139756725102464 cross_device_ops.py:443] Reduce to
/job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
INFO:tensorflow:Reduce to /job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
I1201 07:53:51.258597 139756725102464 cross_device_ops.py:443] Reduce to
/job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
INFO:tensorflow:Reduce to /job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
I1201 07:53:51.260226 139756725102464 cross_device_ops.py:443] Reduce to
/job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
INFO:tensorflow:Reduce to /job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
I1201 07:53:51.260993 139756725102464 cross_device_ops.py:443] Reduce to
/job:localhost/replica:0/task:0/device:CPU:0 then broadcast to
('/job:localhost/replica:0/task:0/device:CPU:0',).
INFO:tensorflow:Step 14100 per-step time 2.207s loss=1.205
```

I1201 07:57:34.730257 139756725102464 model_lib_v2.py:651] Step 14100 per-step time 2.207s
loss=1.205
INFO:tensorflow:Step 14200 per-step time 2.177s loss=1.306
I1201 08:01:15.138499 139756725102464 model_lib_v2.py:651] Step 14200 per-step time 2.177s
loss=1.306
INFO:tensorflow:Step 14300 per-step time 2.268s loss=0.622
I1201 08:04:55.774094 139756725102464 model_lib_v2.py:651] Step 14300 per-step time 2.268s
loss=0.622
INFO:tensorflow:Step 14400 per-step time 2.175s loss=0.530
I1201 08:08:36.162071 139756725102464 model_lib_v2.py:651] Step 14400 per-step time 2.175s
loss=0.530
INFO:tensorflow:Step 14500 per-step time 2.216s loss=1.158
I1201 08:12:16.262050 139756725102464 model_lib_v2.py:651] Step 14500 per-step time 2.216s
loss=1.158
INFO:tensorflow:Step 14600 per-step time 2.184s loss=1.206
I1201 08:15:55.779603 139756725102464 model_lib_v2.py:651] Step 14600 per-step time 2.184s
loss=1.206
INFO:tensorflow:Step 14700 per-step time 2.159s loss=0.735
I1201 08:19:35.091804 139756725102464 model_lib_v2.py:651] Step 14700 per-step time 2.159s
loss=0.735
INFO:tensorflow:Step 14800 per-step time 2.218s loss=0.784
I1201 08:23:15.077945 139756725102464 model_lib_v2.py:651] Step 14800 per-step time 2.218s
loss=0.784
INFO:tensorflow:Step 14900 per-step time 2.271s loss=0.951
I1201 08:26:54.931484 139756725102464 model_lib_v2.py:651] Step 14900 per-step time 2.271s
loss=0.951
INFO:tensorflow:Step 15000 per-step time 2.249s loss=1.047
I1201 08:30:33.890137 139756725102464 model_lib_v2.py:651] Step 15000 per-step time 2.249s
loss=1.047
INFO:tensorflow:Step 15100 per-step time 2.237s loss=0.699
I1201 08:34:15.869278 139756725102464 model_lib_v2.py:651] Step 15100 per-step time 2.237s
loss=0.699
INFO:tensorflow:Step 15200 per-step time 2.151s loss=1.155
I1201 08:37:54.850553 139756725102464 model_lib_v2.py:651] Step 15200 per-step time 2.151s
loss=1.155
INFO:tensorflow:Step 15300 per-step time 2.253s loss=0.485
I1201 08:41:33.476623 139756725102464 model_lib_v2.py:651] Step 15300 per-step time 2.253s
loss=0.485
INFO:tensorflow:Step 15400 per-step time 2.175s loss=0.736
I1201 08:45:12.836433 139756725102464 model_lib_v2.py:651] Step 15400 per-step time 2.175s
loss=0.736
INFO:tensorflow:Step 15500 per-step time 2.164s loss=0.525
I1201 08:48:51.479895 139756725102464 model_lib_v2.py:651] Step 15500 per-step time 2.164s
loss=0.525
INFO:tensorflow:Step 15600 per-step time 2.174s loss=0.989
I1201 08:52:30.443560 139756725102464 model_lib_v2.py:651] Step 15600 per-step time 2.174s
loss=0.989
INFO:tensorflow:Step 15700 per-step time 2.264s loss=1.537
I1201 08:56:09.043290 139756725102464 model_lib_v2.py:651] Step 15700 per-step time 2.264s
loss=1.537
INFO:tensorflow:Step 15800 per-step time 2.168s loss=1.403
I1201 08:59:47.496092 139756725102464 model_lib_v2.py:651] Step 15800 per-step time 2.168s
loss=1.403
INFO:tensorflow:Step 15900 per-step time 2.145s loss=0.558
I1201 09:03:25.688253 139756725102464 model_lib_v2.py:651] Step 15900 per-step time 2.145s
loss=0.558
INFO:tensorflow:Step 16000 per-step time 2.226s loss=0.891
I1201 09:07:03.793456 139756725102464 model_lib_v2.py:651] Step 16000 per-step time 2.226s
loss=0.891
INFO:tensorflow:Step 16100 per-step time 2.156s loss=0.766
I1201 09:10:44.737951 139756725102464 model_lib_v2.py:651] Step 16100 per-step time 2.156s
loss=0.766
INFO:tensorflow:Step 16200 per-step time 2.177s loss=1.569
I1201 09:14:21.947304 139756725102464 model_lib_v2.py:651] Step 16200 per-step time 2.177s
loss=1.569
INFO:tensorflow:Step 16300 per-step time 2.200s loss=1.345
I1201 09:18:00.292856 139756725102464 model_lib_v2.py:651] Step 16300 per-step time 2.200s
loss=1.345
INFO:tensorflow:Step 16400 per-step time 2.153s loss=1.287
I1201 09:21:38.322721 139756725102464 model_lib_v2.py:651] Step 16400 per-step time 2.153s
loss=1.287
INFO:tensorflow:Step 16500 per-step time 2.154s loss=1.055
I1201 09:25:16.702115 139756725102464 model_lib_v2.py:651] Step 16500 per-step time 2.154s
loss=1.055
INFO:tensorflow:Step 16600 per-step time 2.152s loss=0.647
I1201 09:28:55.365032 139756725102464 model_lib_v2.py:651] Step 16600 per-step time 2.152s
loss=0.647

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INFO:tensorflow:Step 16700 per-step time 2.211s loss=0.655
I1201 09:32:33.881379 139756725102464 model_lib_v2.py:651] Step 16700 per-step time 2.211s
loss=0.655
INFO:tensorflow:Step 16800 per-step time 2.146s loss=0.438
I1201 09:36:13.116461 139756725102464 model_lib_v2.py:651] Step 16800 per-step time 2.146s
loss=0.438
INFO:tensorflow:Step 16900 per-step time 2.212s loss=0.518
I1201 09:39:52.352892 139756725102464 model_lib_v2.py:651] Step 16900 per-step time 2.212s
loss=0.518
INFO:tensorflow:Step 17000 per-step time 2.241s loss=1.049
I1201 09:43:31.092984 139756725102464 model_lib_v2.py:651] Step 17000 per-step time 2.241s
loss=1.049
INFO:tensorflow:Step 17100 per-step time 2.149s loss=1.615
I1201 09:47:13.664053 139756725102464 model_lib_v2.py:651] Step 17100 per-step time 2.149s
loss=1.615
INFO:tensorflow:Step 17200 per-step time 2.152s loss=1.075
I1201 09:50:53.065934 139756725102464 model_lib_v2.py:651] Step 17200 per-step time 2.152s
loss=1.075
INFO:tensorflow:Step 17300 per-step time 2.202s loss=1.917
I1201 09:54:32.151705 139756725102464 model_lib_v2.py:651] Step 17300 per-step time 2.202s
loss=1.917
INFO:tensorflow:Step 17400 per-step time 2.264s loss=1.593
I1201 09:58:11.601447 139756725102464 model_lib_v2.py:651] Step 17400 per-step time 2.264s
loss=1.593
INFO:tensorflow:Step 17500 per-step time 2.196s loss=0.282
I1201 10:01:51.248932 139756725102464 model_lib_v2.py:651] Step 17500 per-step time 2.196s
loss=0.282
INFO:tensorflow:Step 17600 per-step time 2.149s loss=1.061
I1201 10:05:30.004659 139756725102464 model_lib_v2.py:651] Step 17600 per-step time 2.149s
loss=1.061
INFO:tensorflow:Step 17700 per-step time 2.187s loss=0.284
I1201 10:09:09.230723 139756725102464 model_lib_v2.py:651] Step 17700 per-step time 2.187s
loss=0.284
INFO:tensorflow:Step 17800 per-step time 2.294s loss=1.408
I1201 10:12:47.774057 139756725102464 model_lib_v2.py:651] Step 17800 per-step time 2.294s
loss=1.408
INFO:tensorflow:Step 17900 per-step time 2.177s loss=1.138
I1201 10:16:26.711206 139756725102464 model_lib_v2.py:651] Step 17900 per-step time 2.177s
loss=1.138
INFO:tensorflow:Step 18000 per-step time 2.141s loss=1.167
I1201 10:20:05.576446 139756725102464 model_lib_v2.py:651] Step 18000 per-step time 2.141s
loss=1.167
INFO:tensorflow:Step 18100 per-step time 2.218s loss=0.939
I1201 10:23:47.254428 139756725102464 model_lib_v2.py:651] Step 18100 per-step time 2.218s
loss=0.939
INFO:tensorflow:Step 18200 per-step time 2.231s loss=0.026
I1201 10:27:25.580151 139756725102464 model_lib_v2.py:651] Step 18200 per-step time 2.231s
loss=0.026
INFO:tensorflow:Step 18300 per-step time 2.154s loss=1.012
I1201 10:31:04.074902 139756725102464 model_lib_v2.py:651] Step 18300 per-step time 2.154s
loss=1.012
INFO:tensorflow:Step 18400 per-step time 2.215s loss=0.756
I1201 10:34:42.150305 139756725102464 model_lib_v2.py:651] Step 18400 per-step time 2.215s
loss=0.756
INFO:tensorflow:Step 18500 per-step time 2.265s loss=0.793
I1201 10:38:20.994570 139756725102464 model_lib_v2.py:651] Step 18500 per-step time 2.265s
loss=0.793
INFO:tensorflow:Step 18600 per-step time 2.144s loss=1.706
I1201 10:41:59.944889 139756725102464 model_lib_v2.py:651] Step 18600 per-step time 2.144s
loss=1.706
INFO:tensorflow:Step 18700 per-step time 2.158s loss=0.568
I1201 10:45:38.371645 139756725102464 model_lib_v2.py:651] Step 18700 per-step time 2.158s
loss=0.568
INFO:tensorflow:Step 18800 per-step time 2.180s loss=1.783
I1201 10:49:17.044075 139756725102464 model_lib_v2.py:651] Step 18800 per-step time 2.180s
loss=1.783
INFO:tensorflow:Step 18900 per-step time 2.136s loss=0.645
I1201 10:52:55.841201 139756725102464 model_lib_v2.py:651] Step 18900 per-step time 2.136s
loss=0.645
INFO:tensorflow:Step 19000 per-step time 2.141s loss=1.118
I1201 10:56:33.793750 139756725102464 model_lib_v2.py:651] Step 19000 per-step time 2.141s
loss=1.118
INFO:tensorflow:Step 19100 per-step time 2.149s loss=0.832
I1201 11:00:14.789523 139756725102464 model_lib_v2.py:651] Step 19100 per-step time 2.149s
loss=0.832
INFO:tensorflow:Step 19200 per-step time 2.191s loss=0.730
I1201 11:03:52.687047 139756725102464 model_lib_v2.py:651] Step 19200 per-step time 2.191s
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loss=0.730
INFO:tensorflow:Step 19300 per-step time 2.174s loss=1.299
I1201 11:07:31.708550 139756725102464 model_lib_v2.py:651] Step 19300 per-step time 2.174s
loss=1.299
INFO:tensorflow:Step 19400 per-step time 2.194s loss=0.751
I1201 11:11:09.275780 139756725102464 model_lib_v2.py:651] Step 19400 per-step time 2.194s
loss=0.751
INFO:tensorflow:Step 19500 per-step time 2.162s loss=0.404
I1201 11:14:47.008981 139756725102464 model_lib_v2.py:651] Step 19500 per-step time 2.162s
loss=0.404
INFO:tensorflow:Step 19600 per-step time 2.152s loss=0.755
I1201 11:18:24.957621 139756725102464 model_lib_v2.py:651] Step 19600 per-step time 2.152s
loss=0.755
INFO:tensorflow:Step 19700 per-step time 2.138s loss=1.093
I1201 11:22:02.821335 139756725102464 model_lib_v2.py:651] Step 19700 per-step time 2.138s
loss=1.093
INFO:tensorflow:Step 19800 per-step time 2.213s loss=1.202
I1201 11:25:41.266072 139756725102464 model_lib_v2.py:651] Step 19800 per-step time 2.213s
loss=1.202
INFO:tensorflow:Step 19900 per-step time 2.172s loss=1.030
I1201 11:29:19.199009 139756725102464 model_lib_v2.py:651] Step 19900 per-step time 2.172s
loss=1.030
INFO:tensorflow:Step 20000 per-step time 2.154s loss=1.260
I1201 11:32:57.253803 139756725102464 model_lib_v2.py:651] Step 20000 per-step time 2.154s
loss=1.260
INFO:tensorflow:Step 20100 per-step time 2.144s loss=0.999
I1201 11:36:38.611633 139756725102464 model_lib_v2.py:651] Step 20100 per-step time 2.144s
loss=0.999
INFO:tensorflow:Step 20200 per-step time 2.146s loss=0.710
I1201 11:40:16.806586 139756725102464 model_lib_v2.py:651] Step 20200 per-step time 2.146s
loss=0.710
INFO:tensorflow:Step 20300 per-step time 2.248s loss=1.048
I1201 11:43:55.697323 139756725102464 model_lib_v2.py:651] Step 20300 per-step time 2.248s
loss=1.048
INFO:tensorflow:Step 20400 per-step time 2.154s loss=1.811
I1201 11:47:34.722472 139756725102464 model_lib_v2.py:651] Step 20400 per-step time 2.154s
loss=1.811
INFO:tensorflow:Step 20500 per-step time 2.276s loss=1.249
I1201 11:51:13.211241 139756725102464 model_lib_v2.py:651] Step 20500 per-step time 2.276s
loss=1.249
INFO:tensorflow:Step 20600 per-step time 2.150s loss=0.639
I1201 11:54:51.779177 139756725102464 model_lib_v2.py:651] Step 20600 per-step time 2.150s
loss=0.639
INFO:tensorflow:Step 20700 per-step time 2.198s loss=0.582
I1201 11:58:31.182515 139756725102464 model_lib_v2.py:651] Step 20700 per-step time 2.198s
loss=0.582
INFO:tensorflow:Step 20800 per-step time 2.213s loss=1.183
I1201 12:02:09.915832 139756725102464 model_lib_v2.py:651] Step 20800 per-step time 2.213s
loss=1.183
INFO:tensorflow:Step 20900 per-step time 2.323s loss=1.335
I1201 12:05:48.925421 139756725102464 model_lib_v2.py:651] Step 20900 per-step time 2.323s
loss=1.335
INFO:tensorflow:Step 21000 per-step time 2.221s loss=0.995
I1201 12:09:28.452472 139756725102464 model_lib_v2.py:651] Step 21000 per-step time 2.221s
loss=0.995
INFO:tensorflow:Step 21100 per-step time 2.176s loss=1.307
I1201 12:13:11.291841 139756725102464 model_lib_v2.py:651] Step 21100 per-step time 2.176s
loss=1.307
INFO:tensorflow:Step 21200 per-step time 2.177s loss=1.784
I1201 12:16:50.840292 139756725102464 model_lib_v2.py:651] Step 21200 per-step time 2.177s
loss=1.784
INFO:tensorflow:Step 21300 per-step time 2.211s loss=0.427
I1201 12:20:30.200614 139756725102464 model_lib_v2.py:651] Step 21300 per-step time 2.211s
loss=0.427
INFO:tensorflow:Step 21400 per-step time 2.197s loss=0.956
I1201 12:24:09.144950 139756725102464 model_lib_v2.py:651] Step 21400 per-step time 2.197s
loss=0.956
INFO:tensorflow:Step 21500 per-step time 2.217s loss=0.051
I1201 12:27:48.310568 139756725102464 model_lib_v2.py:651] Step 21500 per-step time 2.217s
loss=0.051
INFO:tensorflow:Step 21600 per-step time 2.206s loss=1.408
I1201 12:31:27.867656 139756725102464 model_lib_v2.py:651] Step 21600 per-step time 2.206s
loss=1.408
INFO:tensorflow:Step 21700 per-step time 2.138s loss=1.078
I1201 12:35:06.753229 139756725102464 model_lib_v2.py:651] Step 21700 per-step time 2.138s
loss=1.078
INFO:tensorflow:Step 21800 per-step time 2.150s loss=0.347
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I1201 12:38:45.039462 139756725102464 model_lib_v2.py:651] Step 21800 per-step time 2.150s loss=0.347
INFO:tensorflow:Step 21900 per-step time 2.187s loss=0.792
I1201 12:42:23.340113 139756725102464 model_lib_v2.py:651] Step 21900 per-step time 2.187s loss=0.792
INFO:tensorflow:Step 22000 per-step time 2.135s loss=1.390
I1201 12:46:02.860916 139756725102464 model_lib_v2.py:651] Step 22000 per-step time 2.135s loss=1.390
INFO:tensorflow:Step 22100 per-step time 2.195s loss=1.124
I1201 12:49:45.526332 139756725102464 model_lib_v2.py:651] Step 22100 per-step time 2.195s loss=1.124
INFO:tensorflow:Step 22200 per-step time 2.243s loss=0.986
I1201 12:53:25.086682 139756725102464 model_lib_v2.py:651] Step 22200 per-step time 2.243s loss=0.986
INFO:tensorflow:Step 22300 per-step time 2.205s loss=1.102
I1201 12:57:05.763334 139756725102464 model_lib_v2.py:651] Step 22300 per-step time 2.205s loss=1.102
INFO:tensorflow:Step 22400 per-step time 2.258s loss=1.128
I1201 13:00:45.721129 139756725102464 model_lib_v2.py:651] Step 22400 per-step time 2.258s loss=1.128
INFO:tensorflow:Step 22500 per-step time 2.181s loss=1.231
I1201 13:04:25.688634 139756725102464 model_lib_v2.py:651] Step 22500 per-step time 2.181s loss=1.231
INFO:tensorflow:Step 22600 per-step time 2.294s loss=0.793
I1201 13:08:04.220220 139756725102464 model_lib_v2.py:651] Step 22600 per-step time 2.294s loss=0.793
INFO:tensorflow:Step 22700 per-step time 2.317s loss=0.913
I1201 13:11:43.206298 139756725102464 model_lib_v2.py:651] Step 22700 per-step time 2.317s loss=0.913
INFO:tensorflow:Step 22800 per-step time 2.141s loss=1.148
I1201 13:15:22.034356 139756725102464 model_lib_v2.py:651] Step 22800 per-step time 2.141s loss=1.148
INFO:tensorflow:Step 22900 per-step time 2.141s loss=0.644
I1201 13:19:00.308264 139756725102464 model_lib_v2.py:651] Step 22900 per-step time 2.141s loss=0.644
INFO:tensorflow:Step 23000 per-step time 2.213s loss=1.400
I1201 13:22:39.609347 139756725102464 model_lib_v2.py:651] Step 23000 per-step time 2.213s loss=1.400
INFO:tensorflow:Step 23100 per-step time 2.226s loss=1.043
I1201 13:26:22.522515 139756725102464 model_lib_v2.py:651] Step 23100 per-step time 2.226s loss=1.043
INFO:tensorflow:Step 23200 per-step time 2.199s loss=0.761
I1201 13:30:03.153079 139756725102464 model_lib_v2.py:651] Step 23200 per-step time 2.199s loss=0.761
INFO:tensorflow:Step 23300 per-step time 2.214s loss=0.998
I1201 13:33:43.248462 139756725102464 model_lib_v2.py:651] Step 23300 per-step time 2.214s loss=0.998
INFO:tensorflow:Step 23400 per-step time 2.135s loss=0.171
I1201 13:37:24.045253 139756725102464 model_lib_v2.py:651] Step 23400 per-step time 2.135s loss=0.171
INFO:tensorflow:Step 23500 per-step time 2.193s loss=0.935
I1201 13:41:03.995796 139756725102464 model_lib_v2.py:651] Step 23500 per-step time 2.193s loss=0.935
INFO:tensorflow:Step 23600 per-step time 2.161s loss=0.660
I1201 13:44:44.393080 139756725102464 model_lib_v2.py:651] Step 23600 per-step time 2.161s loss=0.660
INFO:tensorflow:Step 23700 per-step time 2.176s loss=0.930
I1201 13:48:24.340337 139756725102464 model_lib_v2.py:651] Step 23700 per-step time 2.176s loss=0.930
INFO:tensorflow:Step 23800 per-step time 2.178s loss=1.162
I1201 13:52:04.541193 139756725102464 model_lib_v2.py:651] Step 23800 per-step time 2.178s loss=1.162
INFO:tensorflow:Step 23900 per-step time 2.184s loss=1.387
I1201 13:55:45.126611 139756725102464 model_lib_v2.py:651] Step 23900 per-step time 2.184s loss=1.387
INFO:tensorflow:Step 24000 per-step time 2.254s loss=0.468
I1201 13:59:25.681519 139756725102464 model_lib_v2.py:651] Step 24000 per-step time 2.254s loss=0.468
INFO:tensorflow:Step 24100 per-step time 2.192s loss=0.646
I1201 14:03:10.333759 139756725102464 model_lib_v2.py:651] Step 24100 per-step time 2.192s loss=0.646
INFO:tensorflow:Step 24200 per-step time 2.187s loss=0.504
I1201 14:06:51.172852 139756725102464 model_lib_v2.py:651] Step 24200 per-step time 2.187s loss=0.504
INFO:tensorflow:Step 24300 per-step time 2.164s loss=0.493
I1201 14:10:31.724379 139756725102464 model_lib_v2.py:651] Step 24300 per-step time 2.164s loss=0.493

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INFO:tensorflow:Step 24400 per-step time 2.168s loss=0.622
I1201 14:14:13.609850 139756725102464 model_lib_v2.py:651] Step 24400 per-step time 2.168s
loss=0.622
INFO:tensorflow:Step 24500 per-step time 2.155s loss=0.319
I1201 14:17:55.134171 139756725102464 model_lib_v2.py:651] Step 24500 per-step time 2.155s
loss=0.319
INFO:tensorflow:Step 24600 per-step time 2.261s loss=0.776
I1201 14:21:36.426995 139756725102464 model_lib_v2.py:651] Step 24600 per-step time 2.261s
loss=0.776
INFO:tensorflow:Step 24700 per-step time 2.267s loss=0.810
I1201 14:25:18.240117 139756725102464 model_lib_v2.py:651] Step 24700 per-step time 2.267s
loss=0.810
INFO:tensorflow:Step 24800 per-step time 2.188s loss=0.780
I1201 14:28:58.712395 139756725102464 model_lib_v2.py:651] Step 24800 per-step time 2.188s
loss=0.780
INFO:tensorflow:Step 24900 per-step time 2.206s loss=1.459
I1201 14:32:40.198125 139756725102464 model_lib_v2.py:651] Step 24900 per-step time 2.206s
loss=1.459
INFO:tensorflow:Step 25000 per-step time 2.296s loss=0.740
I1201 14:36:22.846940 139756725102464 model_lib_v2.py:651] Step 25000 per-step time 2.296s
loss=0.740
```

2. Evaluation Model

In []:

```
!python /content/models/research/object_detection/model_main_tf2.py \
--model_dir=/content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/exporter/checkpoint \
--pipeline_config_path=/content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/exporter/pipeline.config \
--checkpoint_dir=/content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/training_logs
```

```
2020-12-02 00:53:52.259258: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudart.so.10.1
WARNING:tensorflow:Forced number of epochs for all eval validations to be 1.
W1202 00:53:57.812318 140530290333568 model_lib_v2.py:1026] Forced number of epochs for all eval validations to be 1.
INFO:tensorflow:Maybe overwriting sample_1_of_n_eval_examples: None
I1202 00:53:57.812576 140530290333568 config_util.py:552] Maybe overwriting sample_1_of_n_eval_examples: None
INFO:tensorflow:Maybe overwriting use_bfloat16: False
I1202 00:53:57.812669 140530290333568 config_util.py:552] Maybe overwriting use_bfloat16: False
INFO:tensorflow:Maybe overwriting eval_num_epochs: 1
I1202 00:53:57.812754 140530290333568 config_util.py:552] Maybe overwriting eval_num_epochs: 1
WARNING:tensorflow:Expected number of evaluation epochs is 1, but instead encountered `eval_on_train_input_config.num_epochs` = 0. Overwriting `num_epochs` to 1.
W1202 00:53:57.812893 140530290333568 model_lib_v2.py:1041] Expected number of evaluation epochs is 1, but instead encountered `eval_on_train_input_config.num_epochs` = 0. Overwriting `num_epochs` to 1.
2020-12-02 00:53:57.851922: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcuda.so.1
2020-12-02 00:53:57.856807: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so returning NUMA node zero
2020-12-02 00:53:57.857419: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1716] Found device 0 with properties:
pciBusID: 0000:00:04.0 name: Tesla T4 computeCapability: 7.5
coreClock: 1.59GHz coreCount: 40 deviceMemorySize: 14.73GiB deviceMemoryBandwidth: 298.08GiB/s
2020-12-02 00:53:57.857462: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudart.so.10.1
2020-12-02 00:53:57.864975: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcublas.so.10
2020-12-02 00:53:57.866668: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcufft.so.10
2020-12-02 00:53:57.867078: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcurand.so.10
2020-12-02 00:53:57.875432: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcusolver.so.10
2020-12-02 00:53:57.887119: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
```

```
Successfully opened dynamic library libcusparse.so.10
2020-12-02 00:53:57.901932: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudnn.so.7
2020-12-02 00:53:57.902080: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-02 00:53:57.902712: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-02 00:53:57.903205: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1858] Adding
visible gpu devices: 0
2020-12-02 00:53:57.922692: I tensorflow/core/platform/profile_utils/cpu_utils.cc:104] CPU
Frequency: 2200000000 Hz
2020-12-02 00:53:57.922932: I tensorflow/compiler/xla/service/service.cc:168] XLA service
0x16b1480 initialized for platform Host (this does not guarantee that XLA will be used). Devices:
2020-12-02 00:53:57.922968: I tensorflow/compiler/xla/service/service.cc:176] StreamExecutor dev
ice (0): Host, Default Version
2020-12-02 00:53:58.035504: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-02 00:53:58.036291: I tensorflow/compiler/xla/service/service.cc:168] XLA service
0x16b12c0 initialized for platform CUDA (this does not guarantee that XLA will be used). Devices:
2020-12-02 00:53:58.036323: I tensorflow/compiler/xla/service/service.cc:176] StreamExecutor dev
ice (0): Tesla T4, Compute Capability 7.5
2020-12-02 00:53:58.036504: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-02 00:53:58.037111: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1716] Found device
0 with properties:
pciBusID: 0000:00:04.0 name: Tesla T4 computeCapability: 7.5
coreClock: 1.59GHz coreCount: 40 deviceMemorySize: 14.73GiB deviceMemoryBandwidth: 298.08GiB/s
2020-12-02 00:53:58.037155: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudart.so.10.1
2020-12-02 00:53:58.037207: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcublas.so.10
2020-12-02 00:53:58.037229: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcufft.so.10
2020-12-02 00:53:58.037251: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcurand.so.10
2020-12-02 00:53:58.037275: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcusolver.so.10
2020-12-02 00:53:58.037294: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcusparse.so.10
2020-12-02 00:53:58.037313: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudnn.so.7
2020-12-02 00:53:58.037386: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-02 00:53:58.037946: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-02 00:53:58.038434: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1858] Adding
visible gpu devices: 0
2020-12-02 00:53:58.038481: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudart.so.10.1
2020-12-02 00:53:58.701700: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1257] Device
interconnect StreamExecutor with strength 1 edge matrix:
2020-12-02 00:53:58.701761: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1263] 0
2020-12-02 00:53:58.701773: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1276] 0: N
2020-12-02 00:53:58.702011: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-02 00:53:58.702600: I tensorflow/stream_executor/cuda/cuda_gpu_executor.cc:982] successful
NUMA node read from SysFS had negative value (-1), but there must be at least one NUMA node, so re
turning NUMA node zero
2020-12-02 00:53:58.703161: W tensorflow/core/common_runtime/gpu/gpu_bfc_allocator.cc:39]
Overriding allow_growth setting because the TF_FORCE_GPU_ALLOW_GROWTH environment variable is set.
Original config value was 0.
2020-12-02 00:53:58.703207: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1402] Created
TensorFlow device (/job:localhost/replica:0/task:0/device:GPU:0 with 13758 MB memory) -> physical
GPU (device: 0, name: Tesla T4, pci bus id: 0000:00:04.0, compute capability: 7.5)
INFO:tensorflow:Reading unweighted datasets:
['/content/models/research/object_detection/data/tf_record/test.record']
I1202 00:53:58.767578 140530290333568 dataset_builder.py:148] Reading unweighted datasets:
['/content/models/research/object_detection/data/tf_record/test.record']
INFO:tensorflow:Reading record datasets for input file:
['/content/models/research/object_detection/data/tf_record/test.record']
```

```
[... , connection, model_id, location, object_annotation, data, id_label, class_label ]  
I1202 00:53:58.769914 140530290333568 dataset_builder.py:77] Reading record datasets for input file: ['/content/models/research/object_detection/data/tf_record/test.record']  
INFO:tensorflow:Number of filenames to read: 1  
I1202 00:53:58.770105 140530290333568 dataset_builder.py:78] Number of filenames to read: 1  
WARNING:tensorflow:num_readers has been reduced to 1 to match input file shards.  
W1202 00:53:58.770213 140530290333568 dataset_builder.py:86] num_readers has been reduced to 1 to match input file shards.  
WARNING:tensorflow:From /content/models/research/object_detection/builders/dataset_builder.py:103: parallel_interleave (from tensorflow.python.data.experimental.ops.interleave_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Use `tf.data.Dataset.interleave(map_func, cycle_length, block_length, num_parallel_calls=tf.data.experimental.AUTOTUNE)` instead. If sloppy execution is desired, use `tf.data.Options.experimental_deterministic`.  
W1202 00:53:58.784124 140530290333568 deprecation.py:323] From /content/models/research/object_detection/builders/dataset_builder.py:103: parallel_interleave (from tensorflow.python.data.experimental.ops.interleave_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Use `tf.data.Dataset.interleave(map_func, cycle_length, block_length, num_parallel_calls=tf.data.experimental.AUTOTUNE)` instead. If sloppy execution is desired, use `tf.data.Options.experimental_deterministic`.  
WARNING:tensorflow:From /content/models/research/object_detection/builders/dataset_builder.py:222: DatasetV1.map_with_legacy_function (from tensorflow.python.data.ops.dataset_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Use `tf.data.Dataset.map()`  
W1202 00:53:58.949980 140530290333568 deprecation.py:323] From /content/models/research/object_detection/builders/dataset_builder.py:222: DatasetV1.map_with_legacy_function (from tensorflow.python.data.ops.dataset_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Use `tf.data.Dataset.map()`  
WARNING:tensorflow:From /usr/local/lib/python3.6/dist-packages/tensorflow/python/util/dispatch.py:201: sparse_to_dense (from tensorflow.python.ops.sparse_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Create a `tf.sparse.SparseTensor` and use `tf.sparse.to_dense` instead.  
W1202 00:54:02.576110 140530290333568 deprecation.py:323] From /usr/local/lib/python3.6/dist-packages/tensorflow/python/util/dispatch.py:201: sparse_to_dense (from tensorflow.python.ops.sparse_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Create a `tf.sparse.SparseTensor` and use `tf.sparse.to_dense` instead.  
WARNING:tensorflow:From /content/models/research/object_detection/inputs.py:281: to_float (from tensorflow.python.ops.math_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Use `tf.cast` instead.  
W1202 00:54:03.712362 140530290333568 deprecation.py:323] From /content/models/research/object_detection/inputs.py:281: to_float (from tensorflow.python.ops.math_ops) is deprecated and will be removed in a future version.  
Instructions for updating:  
Use `tf.cast` instead.  
INFO:tensorflow:Waiting for new checkpoint at /content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/training_logs  
I1202 00:54:06.321549 140530290333568 checkpoint_utils.py:125] Waiting for new checkpoint at /content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/training_logs  
INFO:tensorflow:Found new checkpoint at /content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/training_logs/ckpt-26  
I1202 00:54:06.664041 140530290333568 checkpoint_utils.py:134] Found new checkpoint at /content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/training_logs/ckpt-26  
WARNING:tensorflow:From /content/models/research/object_detection/model_lib_v2.py:811: set_learning_phase (from tensorflow.python.keras.backend) is deprecated and will be removed after 2020-10-11.  
Instructions for updating:  
Simply pass a True/False value to the `training` argument of the `__call__` method of your layer or model.  
W1202 00:54:08.477003 140530290333568 deprecation.py:323] From /content/models/research/object_detection/model_lib_v2.py:811: set_learning_phase (from tensorflow.python.keras.backend) is deprecated and will be removed after 2020-10-11.  
Instructions for updating:  
Simply pass a True/False value to the `training` argument of the `__call__` method of your layer or model.  
2020-12-02 00:54:25.480231: W tensorflow/core/framework/cpu_allocator_impl.cc:81] Allocation of 20054016 exceeds 10% of free system memory.  
INFO:tensorflow:depth of additional conv before box predictor: 0  
I1202 00:54:27.424911 140530290333568 convolutional_keras_box_predictor.py:154] depth of additional conv before box predictor: 0
```

```
additional conv. 2018-04-12 14:05:30.029000
WARNING:tensorflow:From /content/models/research/object_detection/utils/model_util.py:57:
Tensor.experimental_ref (from tensorflow.python.framework.ops) is deprecated and will be removed in a future version.
Instructions for updating:
Use ref() instead.
```

```
W1202 00:54:34.185389 140530290333568 deprecation.py:323] From
/content/models/research/object_detection/utils/model_util.py:57: Tensor.experimental_ref (from
tensorflow.python.framework.ops) is deprecated and will be removed in a future version.
```

```
Instructions for updating:
Use ref() instead.
```

```
WARNING:tensorflow:From /usr/local/lib/python3.6/dist-
packages/tensorflow/python/util/dispatch.py:201: softmax_cross_entropy_with_logits (from
tensorflow.python.ops.nn_ops) is deprecated and will be removed in a future version.
```

```
Instructions for updating:
```

```
Future major versions of TensorFlow will allow gradients to flow
into the labels input on backprop by default.
```

```
See `tf.nn.softmax_cross_entropy_with_logits_v2`.
```

```
W1202 00:54:40.302119 140530290333568 deprecation.py:323] From /usr/local/lib/python3.6/dist-
packages/tensorflow/python/util/dispatch.py:201: softmax_cross_entropy_with_logits (from
tensorflow.python.ops.nn_ops) is deprecated and will be removed in a future version.
```

```
Instructions for updating:
```

```
Future major versions of TensorFlow will allow gradients to flow
into the labels input on backprop by default.
```

```
See `tf.nn.softmax_cross_entropy_with_logits_v2`.
```

```
2020-12-02 00:54:52.940219: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcublas.so.10
```

```
2020-12-02 00:54:54.427682: I tensorflow/stream_executor/platform/default/dso_loader.cc:48]
Successfully opened dynamic library libcudnn.so.7
```

```
WARNING:tensorflow:From /content/models/research/object_detection/eval_util.py:927: to_int64 (from
tensorflow.python.ops.math_ops) is deprecated and will be removed in a future version.
```

```
Instructions for updating:
```

```
Use `tf.cast` instead.
```

```
W1202 00:55:02.315414 140530290333568 deprecation.py:323] From
/content/models/research/object_detection/eval_util.py:927: to_int64 (from
tensorflow.python.ops.math_ops) is deprecated and will be removed in a future version.
```

```
Instructions for updating:
```

```
Use `tf.cast` instead.
```

```
INFO:tensorflow:Finished eval step 0
```

```
I1202 00:55:02.323246 140530290333568 model_lib_v2.py:905] Finished eval step 0
```

```
WARNING:tensorflow:From
/content/models/research/object_detection/utils/visualization_utils.py:617: py_func (from
tensorflow.python.ops.script_ops) is deprecated and will be removed in a future version.
```

```
Instructions for updating:
```

```
tf.py_func is deprecated in TF V2. Instead, there are two
options available in V2.
```

- tf.py_function takes a python function which manipulates tf eager
tensors instead of numpy arrays. It's easy to convert a tf eager tensor to
an ndarray (just call tensor.numpy()) but having access to eager tensors
means `tf.py_function`'s can use accelerators such as GPUs as well as
being differentiable using a gradient tape.

- tf.numpy_function maintains the semantics of the deprecated tf.py_func
(it is not differentiable, and manipulates numpy arrays). It drops the
stateful argument making all functions stateful.

```
W1202 00:55:02.455761 140530290333568 deprecation.py:323] From
/content/models/research/object_detection/utils/visualization_utils.py:617: py_func (from
tensorflow.python.ops.script_ops) is deprecated and will be removed in a future version.
```

```
Instructions for updating:
```

```
tf.py_func is deprecated in TF V2. Instead, there are two
options available in V2.
```

- tf.py_function takes a python function which manipulates tf eager
tensors instead of numpy arrays. It's easy to convert a tf eager tensor to
an ndarray (just call tensor.numpy()) but having access to eager tensors
means `tf.py_function`'s can use accelerators such as GPUs as well as
being differentiable using a gradient tape.

- tf.numpy_function maintains the semantics of the deprecated tf.py_func
(it is not differentiable, and manipulates numpy arrays). It drops the
stateful argument making all functions stateful.

```
INFO:tensorflow:Finished eval step 100
```

```
T1202 00:56:08 693755 140530290333568 model lib v2 nv 9051 Finished eval step 100
```

```
I1202 00:55:00.000,00 140530290333568 model_lib_v2.py:905] Finished eval step 100
INFO:tensorflow:Finished eval step 200
I1202 00:57:17.929363 140530290333568 model_lib_v2.py:905] Finished eval step 200
INFO:tensorflow:Finished eval step 300
I1202 00:58:26.986364 140530290333568 model_lib_v2.py:905] Finished eval step 300
INFO:tensorflow:Finished eval step 400
I1202 00:59:36.315804 140530290333568 model_lib_v2.py:905] Finished eval step 400
INFO:tensorflow:Finished eval step 500
I1202 01:00:45.340382 140530290333568 model_lib_v2.py:905] Finished eval step 500
INFO:tensorflow:Finished eval step 600
I1202 01:01:54.415633 140530290333568 model_lib_v2.py:905] Finished eval step 600
INFO:tensorflow:Finished eval step 700
I1202 01:03:03.540029 140530290333568 model_lib_v2.py:905] Finished eval step 700
INFO:tensorflow:Finished eval step 800
I1202 01:04:12.602350 140530290333568 model_lib_v2.py:905] Finished eval step 800
INFO:tensorflow:Finished eval step 900
I1202 01:05:21.679569 140530290333568 model_lib_v2.py:905] Finished eval step 900
INFO:tensorflow:Finished eval step 1000
I1202 01:06:30.744501 140530290333568 model_lib_v2.py:905] Finished eval step 1000
INFO:tensorflow:Finished eval step 1100
I1202 01:07:39.898627 140530290333568 model_lib_v2.py:905] Finished eval step 1100
INFO:tensorflow:Finished eval step 1200
I1202 01:08:49.447344 140530290333568 model_lib_v2.py:905] Finished eval step 1200
INFO:tensorflow:Finished eval step 1300
I1202 01:09:58.734771 140530290333568 model_lib_v2.py:905] Finished eval step 1300
INFO:tensorflow:Finished eval step 1400
I1202 01:11:07.842616 140530290333568 model_lib_v2.py:905] Finished eval step 1400
INFO:tensorflow:Finished eval step 1500
I1202 01:12:17.110306 140530290333568 model_lib_v2.py:905] Finished eval step 1500
INFO:tensorflow:Finished eval step 1600
I1202 01:13:26.289780 140530290333568 model_lib_v2.py:905] Finished eval step 1600
INFO:tensorflow:Finished eval step 1700
I1202 01:14:35.586092 140530290333568 model_lib_v2.py:905] Finished eval step 1700
INFO:tensorflow:Finished eval step 1800
I1202 01:15:44.845205 140530290333568 model_lib_v2.py:905] Finished eval step 1800
INFO:tensorflow:Finished eval step 1900
I1202 01:16:53.967741 140530290333568 model_lib_v2.py:905] Finished eval step 1900
INFO:tensorflow:Finished eval step 2000
I1202 01:18:03.284053 140530290333568 model_lib_v2.py:905] Finished eval step 2000
INFO:tensorflow:Finished eval step 2100
I1202 01:19:12.756082 140530290333568 model_lib_v2.py:905] Finished eval step 2100
INFO:tensorflow:Finished eval step 2200
I1202 01:20:22.278428 140530290333568 model_lib_v2.py:905] Finished eval step 2200
INFO:tensorflow:Finished eval step 2300
I1202 01:21:31.431956 140530290333568 model_lib_v2.py:905] Finished eval step 2300
INFO:tensorflow:Finished eval step 2400
I1202 01:22:40.619093 140530290333568 model_lib_v2.py:905] Finished eval step 2400
INFO:tensorflow:Finished eval step 2500
I1202 01:23:50.043358 140530290333568 model_lib_v2.py:905] Finished eval step 2500
INFO:tensorflow:Finished eval step 2600
I1202 01:24:59.216977 140530290333568 model_lib_v2.py:905] Finished eval step 2600
INFO:tensorflow:Finished eval step 2700
I1202 01:26:08.446274 140530290333568 model_lib_v2.py:905] Finished eval step 2700
INFO:tensorflow:Finished eval step 2800
I1202 01:27:17.817143 140530290333568 model_lib_v2.py:905] Finished eval step 2800
INFO:tensorflow:Finished eval step 2900
I1202 01:28:27.068166 140530290333568 model_lib_v2.py:905] Finished eval step 2900
INFO:tensorflow:Performing evaluation on 2914 images.
I1202 01:28:36.051401 140530290333568 coco_evaluation.py:293] Performing evaluation on 2914
images.
creating index...
index created!
INFO:tensorflow:Loading and preparing annotation results...
I1202 01:28:36.060724 140530290333568 coco_tools.py:116] Loading and preparing annotation
results...
INFO:tensorflow:DONE (t=0.14s)
I1202 01:28:36.201428 140530290333568 coco_tools.py:138] DONE (t=0.14s)
creating index...
index created!
Running per image evaluation...
Evaluate annotation type *bbox*
DONE (t=12.09s).
Accumulating evaluation results...
DONE (t=4.55s).
Average Precision (AP) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.097
Average Precision (AP) @[ IoU=0.50 | area= all | maxDets=100 ] = 0.244
Average Precision (AP) @[ IoU=0.75 | area= all | maxDets=100 ] = 0.060
Average Precision (AP) @[ IoU=0.95 | area= small | maxDets=100 ] = 0.028
```

```
Average Precision (AP) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.081
Average Precision (AP) @[ IoU=0.50:0.95 | area= medium | maxDets=100 ] = 0.149
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 1 ] = 0.151
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets= 10 ] = 0.260
Average Recall (AR) @[ IoU=0.50:0.95 | area= all | maxDets=100 ] = 0.287
Average Recall (AR) @[ IoU=0.50:0.95 | area= small | maxDets=100 ] = 0.078
Average Recall (AR) @[ IoU=0.50:0.95 | area= medium | maxDets=100 ] = 0.256
Average Recall (AR) @[ IoU=0.50:0.95 | area= large | maxDets=100 ] = 0.365
INFO:tensorflow:Eval metrics at step 25000
I1202 01:28:53.188848 140530290333568 model_lib_v2.py:954] Eval metrics at step 25000
INFO:tensorflow: + DetectionBoxes_Precision/mAP: 0.097029
I1202 01:28:53.211074 140530290333568 model_lib_v2.py:957] + DetectionBoxes_Precision/mAP:
0.097029
INFO:tensorflow: + DetectionBoxes_Precision/mAP@.50IOU: 0.243863
I1202 01:28:53.212710 140530290333568 model_lib_v2.py:957] + DetectionBoxes_Precision/mAP@.50IOU:
0.243863
INFO:tensorflow: + DetectionBoxes_Precision/mAP@.75IOU: 0.059924
I1202 01:28:53.213989 140530290333568 model_lib_v2.py:957] + DetectionBoxes_Precision/mAP@.75IOU:
0.059924
INFO:tensorflow: + DetectionBoxes_Precision/mAP (small): 0.027711
I1202 01:28:53.215234 140530290333568 model_lib_v2.py:957] + DetectionBoxes_Precision/mAP
(small): 0.027711
INFO:tensorflow: + DetectionBoxes_Precision/mAP (medium): 0.081415
I1202 01:28:53.216381 140530290333568 model_lib_v2.py:957] + DetectionBoxes_Precision/mAP
(medium): 0.081415
INFO:tensorflow: + DetectionBoxes_Precision/mAP (large): 0.149500
I1202 01:28:53.217514 140530290333568 model_lib_v2.py:957] + DetectionBoxes_Precision/mAP
(large): 0.149500
INFO:tensorflow: + DetectionBoxes_Recall/AR@1: 0.150755
I1202 01:28:53.218660 140530290333568 model_lib_v2.py:957] + DetectionBoxes_Recall/AR@1: 0.150755
INFO:tensorflow: + DetectionBoxes_Recall/AR@10: 0.259651
I1202 01:28:53.219852 140530290333568 model_lib_v2.py:957] + DetectionBoxes_Recall/AR@10:
0.259651
INFO:tensorflow: + DetectionBoxes_Recall/AR@100: 0.286528
I1202 01:28:53.220944 140530290333568 model_lib_v2.py:957] + DetectionBoxes_Recall/AR@100:
0.286528
INFO:tensorflow: + DetectionBoxes_Recall/AR@100 (small): 0.078042
I1202 01:28:53.222076 140530290333568 model_lib_v2.py:957] + DetectionBoxes_Recall/AR@100
(small): 0.078042
INFO:tensorflow: + DetectionBoxes_Recall/AR@100 (medium): 0.255749
I1202 01:28:53.223209 140530290333568 model_lib_v2.py:957] + DetectionBoxes_Recall/AR@100
(medium): 0.255749
INFO:tensorflow: + DetectionBoxes_Recall/AR@100 (large): 0.364699
I1202 01:28:53.224507 140530290333568 model_lib_v2.py:957] + DetectionBoxes_Recall/AR@100
(large): 0.364699
INFO:tensorflow: + Loss/RPNLoss/localization_loss: 0.190679
I1202 01:28:53.225536 140530290333568 model_lib_v2.py:957] + Loss/RPNLoss/localization_loss:
0.190679
INFO:tensorflow: + Loss/RPNLoss/objectness_loss: 0.101579
I1202 01:28:53.226608 140530290333568 model_lib_v2.py:957] + Loss/RPNLoss/objectness_loss:
0.101579
INFO:tensorflow: + Loss/BoxClassifierLoss/localization_loss: 0.183465
I1202 01:28:53.227577 140530290333568 model_lib_v2.py:957] +
Loss/BoxClassifierLoss/localization_loss: 0.183465
INFO:tensorflow: + Loss/BoxClassifierLoss/classification_loss: 0.219116
I1202 01:28:53.228520 140530290333568 model_lib_v2.py:957] +
Loss/BoxClassifierLoss/classification_loss: 0.219116
INFO:tensorflow: + Loss/regularization_loss: 0.000000
I1202 01:28:53.229460 140530290333568 model_lib_v2.py:957] + Loss/regularization_loss: 0.000000
INFO:tensorflow: + Loss/total_loss: 0.694840
I1202 01:28:53.230378 140530290333568 model_lib_v2.py:957] + Loss/total_loss: 0.694840
INFO:tensorflow:Waiting for new checkpoint at
/content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/training_logs
I1202 01:28:53.617418 140530290333568 checkpoint_utils.py:125] Waiting for new checkpoint at
/content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/training_logs
Traceback (most recent call last):
  File "/content/models/research/object_detection/model_main_tf2.py", line 113, in <module>
    tf.compat.v1.app.run()
  File "/usr/local/lib/python3.6/dist-packages/tensorflow/python/platform/app.py", line 40, in run
    File "/usr/local/lib/python3.6/dist-packages/absl/app.py", line 300, in run
      _run_main(main, args)
  File "/usr/local/lib/python3.6/dist-packages/absl/app.py", line 251, in _run_main
    sys.exit(main(argv))
  File "/content/models/research/object_detection/model_main_tf2.py", line 88, in main
    wait_interval=300, timeout=FLAGS.eval_timeout)
  File "/content/models/research/object_detection/model_lib_v2.py", line 1064, in
    ... 1000 more lines ...
```

```
eval_continuously
    checkpoint_dir, timeout=timeout, min_interval_secs=wait_interval):
  File "/usr/local/lib/python3.6/dist-packages/tensorflow/python/training/checkpoint_utils.py", line 184, in checkpoints_iterator
    checkpoint_dir, checkpoint_path, timeout=timeout)
  File "/usr/local/lib/python3.6/dist-packages/tensorflow/python/training/checkpoint_utils.py", line 132, in wait_for_new_checkpoint
    time.sleep(seconds_to_sleep)
KeyboardInterrupt
```

3. Export Model

In []:

```
!mkdir /content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/exporter
```

In []:

```
!python /content/models/research/object_detection/exporter_main_v2.py \
--input_type image_tensor \
--pipeline_config_path \
/content/faster_rcnn_inception_resnet_v2_640x640_coco17_tpu-8/pipeline.config \
--trained_checkpoint_dir \
/content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/training_logs/ \
--output_directory \
/content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/exporter
```

```
2020-12-01 17:34:54.932711: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcudart.so.10.1
2020-12-01 17:35:00.201750: I tensorflow/stream_executor/platform/default/dso_loader.cc:48] Successfully opened dynamic library libcuda.so.1
2020-12-01 17:35:00.211719: E tensorflow/stream_executor/cuda/cuda_driver.cc:314] failed call to cuInit: CUDA_ERROR_NO_DEVICE: no CUDA-capable device is detected
2020-12-01 17:35:00.211780: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:156] kernel driver does not appear to be running on this host (7c485c384df7): /proc/driver/nvidia/version does not exist
2020-12-01 17:35:00.218273: I tensorflow/core/platform/profile_utils/cpu_utils.cc:104] CPU Frequency: 2200000000 Hz
2020-12-01 17:35:00.218530: I tensorflow/compiler/xla/service/service.cc:168] XLA service 0x19e3480 initialized for platform Host (this does not guarantee that XLA will be used). Devices: 2020-12-01 17:35:00.218571: I tensorflow/compiler/xla/service/service.cc:176] StreamExecutor device (0): Host, Default Version
2020-12-01 17:35:23.905663: W tensorflow/core/framework/cpu_allocator_impl.cc:81] Allocation of 20054016 exceeds 10% of free system memory.
INFO:tensorflow:depth of additional conv before box predictor: 0
I1201 17:35:27.414208 140557387433856 convolutional_keras_box_predictor.py:154] depth of additional conv before box predictor: 0
WARNING:tensorflow:From /content/models/research/object_detection/utils/model_util.py:57: Tensor.experimental_ref (from tensorflow.python.framework.ops) is deprecated and will be removed in a future version.
Instructions for updating:
Use ref() instead.
W1201 17:35:38.809993 140557387433856 deprecation.py:323] From /content/models/research/object_detection/utils/model_util.py:57: Tensor.experimental_ref (from tensorflow.python.framework.ops) is deprecated and will be removed in a future version.
Instructions for updating:
Use ref() instead.
WARNING:tensorflow:Skipping full serialization of Keras layer <object_detection.meta_architectures.faster_rcnn_meta_arch.FasterRCNNMetaArch object at 0x7fd5beff6dd8>, because it is not built.
W1201 17:35:53.292633 140557387433856 save_impl.py:78] Skipping full serialization of Keras layer <object_detection.meta_architectures.faster_rcnn_meta_arch.FasterRCNNMetaArch object at 0x7fd5beff6dd8>, because it is not built.
2020-12-01 17:36:29.407933: W tensorflow/util/util.cc:348] Sets are not currently considered sequences, but this may change in the future, so consider avoiding using them.
2020-12-01 17:36:29.930851: W tensorflow/core/framework/cpu_allocator_impl.cc:81] Allocation of 20054016 exceeds 10% of free system memory.
2020-12-01 17:36:30.449138: W tensorflow/core/framework/cpu_allocator_impl.cc:81] Allocation of 20054016 exceeds 10% of free system memory.
2020-12-01 17:36:39.258648: W tensorflow/core/framework/cpu_allocator_impl.cc:81] Allocation of 20054016 exceeds 10% of free system memory.
INFO:tensorflow:Assets written to:
/content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/exporter/saved_model/a
```

```
s
I1201 17:37:15.509196 140557387433856 builder_impl.py:775] Assets written to:
/content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/exporter/saved_model/a
s
INFO:tensorflow:Writing pipeline config file to
/content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/exporter/pipeline.conf

I1201 17:37:17.363214 140557387433856 config_util.py:254] Writing pipeline config file to
/content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/exporter/pipeline.conf
```

4. Inference Model:

In [15]:

```
import os
os.environ['TF_CPP_MIN_LOG_LEVEL'] = '2'      # Suppress TensorFlow logging (1)
import pathlib
import tensorflow as tf

tf.get_logger().setLevel('ERROR')                # Suppress TensorFlow logging (2)

import time
from object_detection.utils import label_map_util
from object_detection.utils import visualization_utils as viz_utils

PATH_TO_MODEL_DIR =
'/content/drive/MyDrive/object_detection/Faster_RCNN_Inception_resnet_640x640/exporter'

PATH_TO_SAVED_MODEL = PATH_TO_MODEL_DIR + "/saved_model"

print('Loading model...', end='')
start_time = time.time()

# Load saved model and build the detection function
detect_fn = tf.saved_model.load(PATH_TO_SAVED_MODEL)

end_time = time.time()
elapsed_time = end_time - start_time
print('Done! Took {} seconds'.format(elapsed_time))
```

Loading model...Done! Took 42.01270651817322 seconds

In [16]:

```
import imutils
from object_detection.utils import ops as utils_ops
utils_ops.tf = tf.compat.v1
tf.gfile = tf.io.gfile
PATH_TO_LABELS = '/content/drive/MyDrive/label_map.pbtxt'

category_index = label_map_util.create_category_index_from_labelmap(PATH_TO_LABELS,
                                                               use_display_name=True)
```

In [17]:

```
import glob
PATH_TO_TEST_IMAGES_DIR = '/content/content/data/Images/test_images'

TEST_IMAGE_PATHS = glob.glob(os.path.join(PATH_TO_TEST_IMAGES_DIR, "*.*"))
TEST_IMAGE_PATHS[0:5]
```

Out[17]:

```
['/content/content/data/Images/test_images/Japan_006194.jpg',
 '/content/content/data/Images/test_images/India_001038.jpg',
 '/content/content/data/Images/test_images/Japan_001991.jpg',
 '/content/content/data/Images/test_images/Japan_001197.jpg',
 '/content/content/data/Images/test_images/India_009607.jpg']
```

In [18]:

```
import numpy as np
from PIL import Image
import matplotlib.pyplot as plt
import warnings
warnings.filterwarnings('ignore')

def load_image_into_numpy_array(path):
    """Load an image from file into a numpy array.

    Puts image into numpy array to feed into tensorflow graph.
    Note that by convention we put it into a numpy array with shape
    (height, width, channels), where channels=3 for RGB.

    Args:
        path: the file path to the image

    Returns:
        uint8 numpy array with shape (img_height, img_width, 3)
    """
    return np.array(Image.open(path))
```

In [19]:

```
for image_path in TEST_IMAGE_PATHS[0:15]:
    print('Running inference for {}... '.format(image_path), end='')

    image_np = load_image_into_numpy_array(image_path)
    print(image_np.shape)
    # Things to try:
    # Flip horizontally
    # image_np = np.fliplr(image_np).copy()

    # Convert image to grayscale
    # image_np = np.tile(
    #     np.mean(image_np, 2, keepdims=True), (1, 1, 3)).astype(np.uint8)

    # The input needs to be a tensor, convert it using `tf.convert_to_tensor`.
    input_tensor = tf.convert_to_tensor(image_np)
    # The model expects a batch of images, so add an axis with `tf.newaxis`.
    #print(input_tensor.shape)
    input_tensor = input_tensor[tf.newaxis, ...]
    #print(input_tensor.shape)
    # input_tensor = np.expand_dims(image_np, 0)
    detections = detect_fn(input_tensor)
    #print(detections)
    # All outputs are batches tensors.
    # Convert to numpy arrays, and take index [0] to remove the batch dimension.
    # We're only interested in the first num_detections.
    num_detections = int(detections.pop('num_detections'))
    detections = {key: value[0, :num_detections].numpy()
                  for key, value in detections.items()}
    detections['num_detections'] = num_detections
    detections['detection_classes'] = detections['detection_classes'].astype(np.int64)

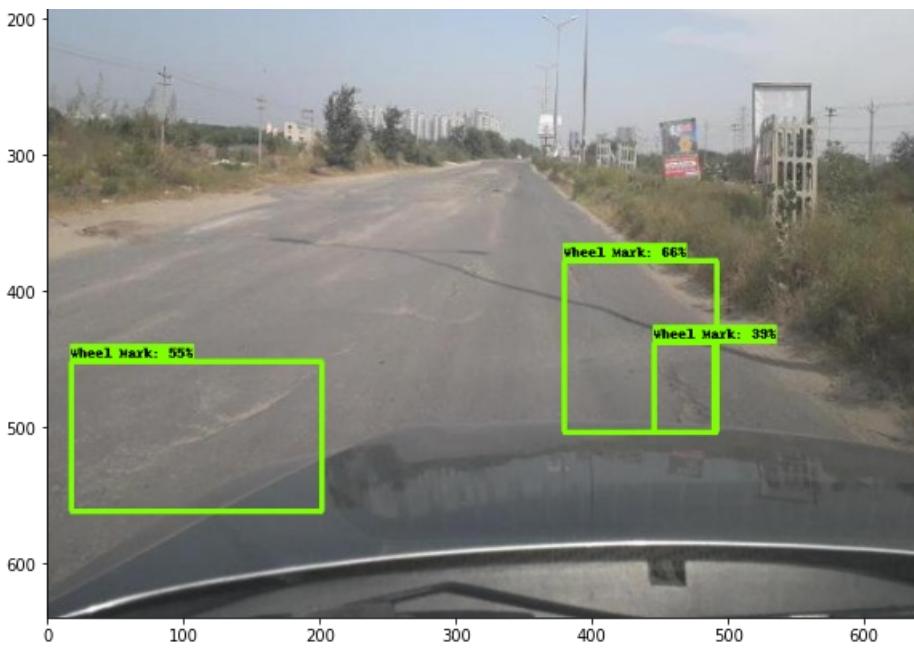
    image_np_with_detections = image_np.copy()

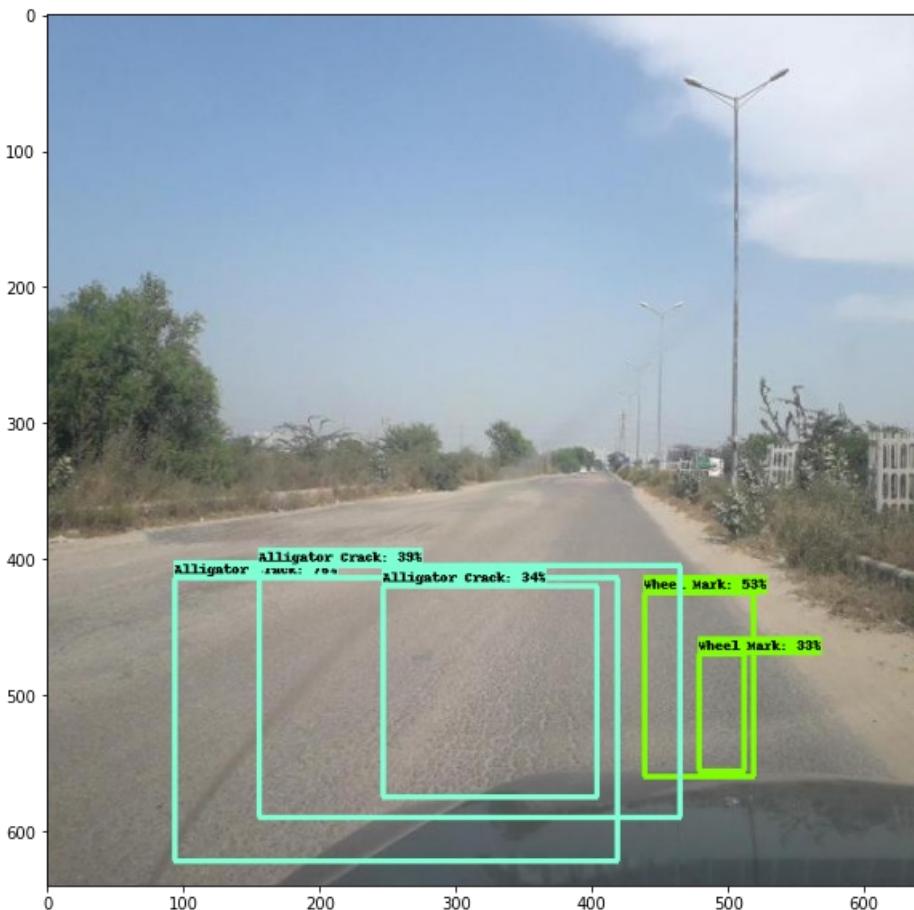
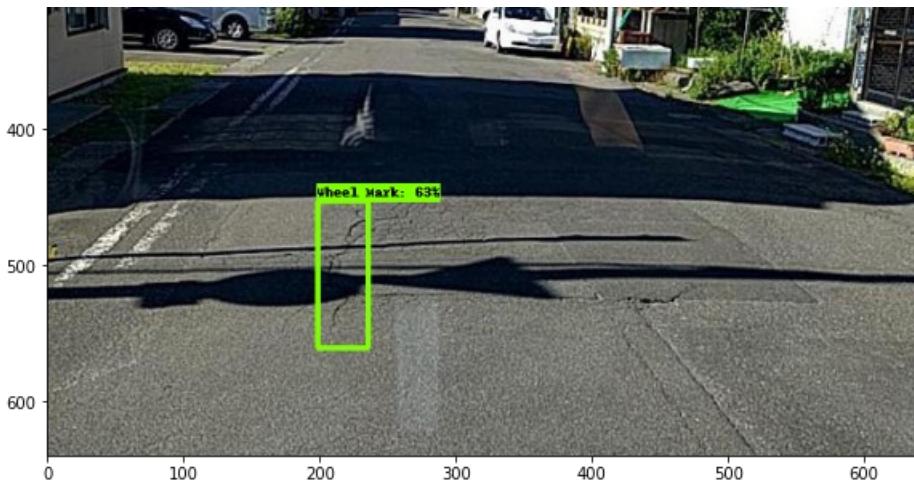
    viz_utils.visualize_boxes_and_labels_on_image_array(
        image_np_with_detections,
        detections['detection_boxes'],
        detections['detection_classes'],
        detections['detection_scores'],
        category_index,
        use_normalized_coordinates=True,
        max_boxes_to_draw=200,
        min_score_thresh=.30,
        agnostic_mode=False)

    plt.figure(figsize=(10,10))
    plt.imshow(image_np_with_detections)
    print('Done')
plt.show()
```

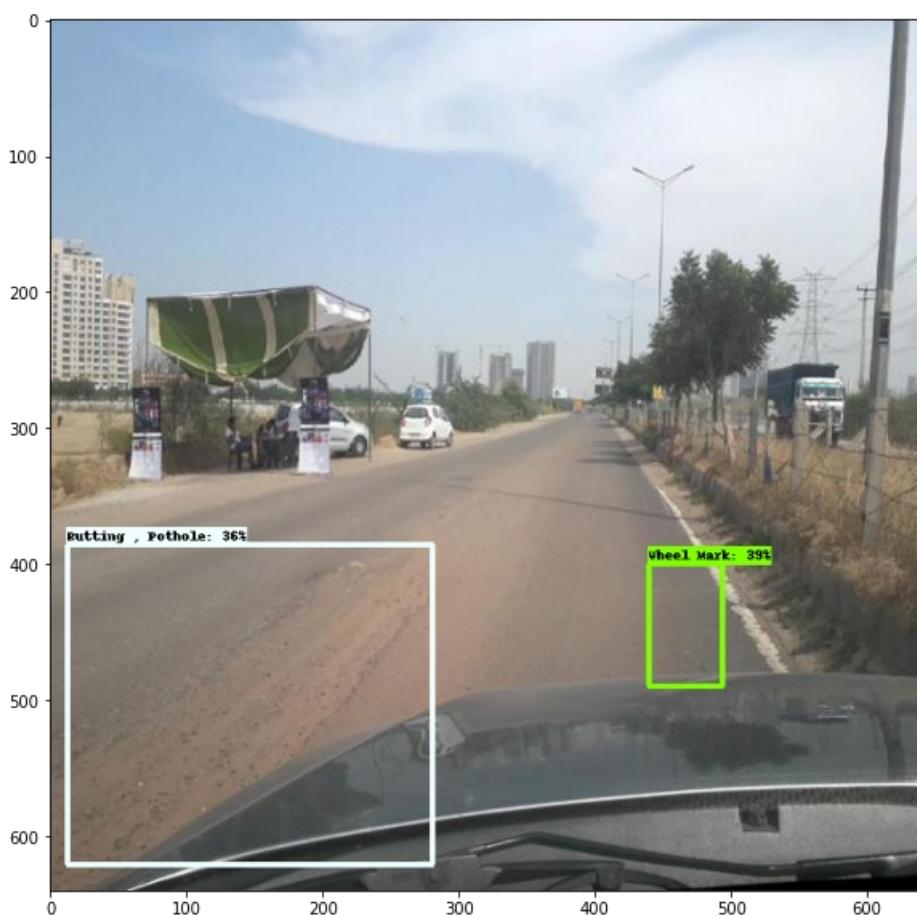
```
Running inference for /content/content/data/images/test_images/Japan_006194.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/India_001038.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/Japan_001991.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/Japan_001197.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/India_009607.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/Czech_003344.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/India_008609.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/Japan_005423.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/Japan_009098.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/India_003759.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/Japan_004062.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/Japan_011516.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/Japan_010146.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/Czech_001115.jpg... (640, 640, 3)
Done
Running inference for /content/content/data/Images/test_images/Japan_008103.jpg... (640, 640, 3)
Done
```

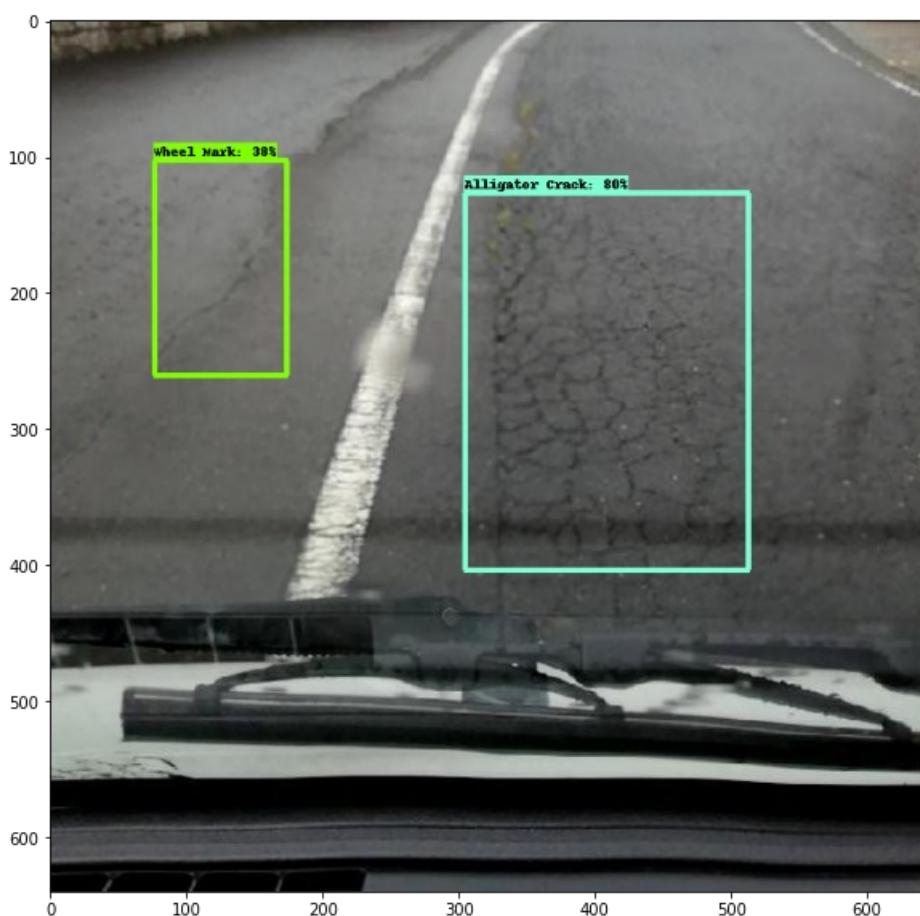


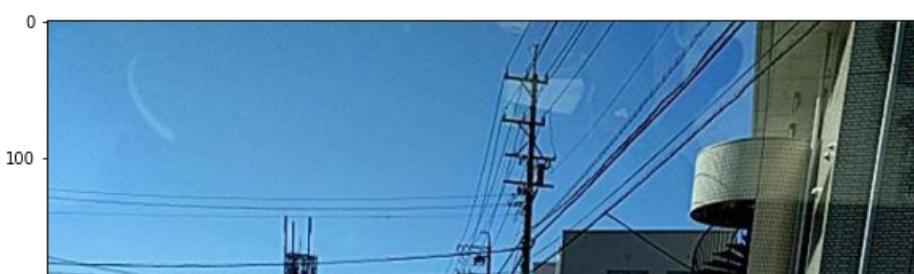
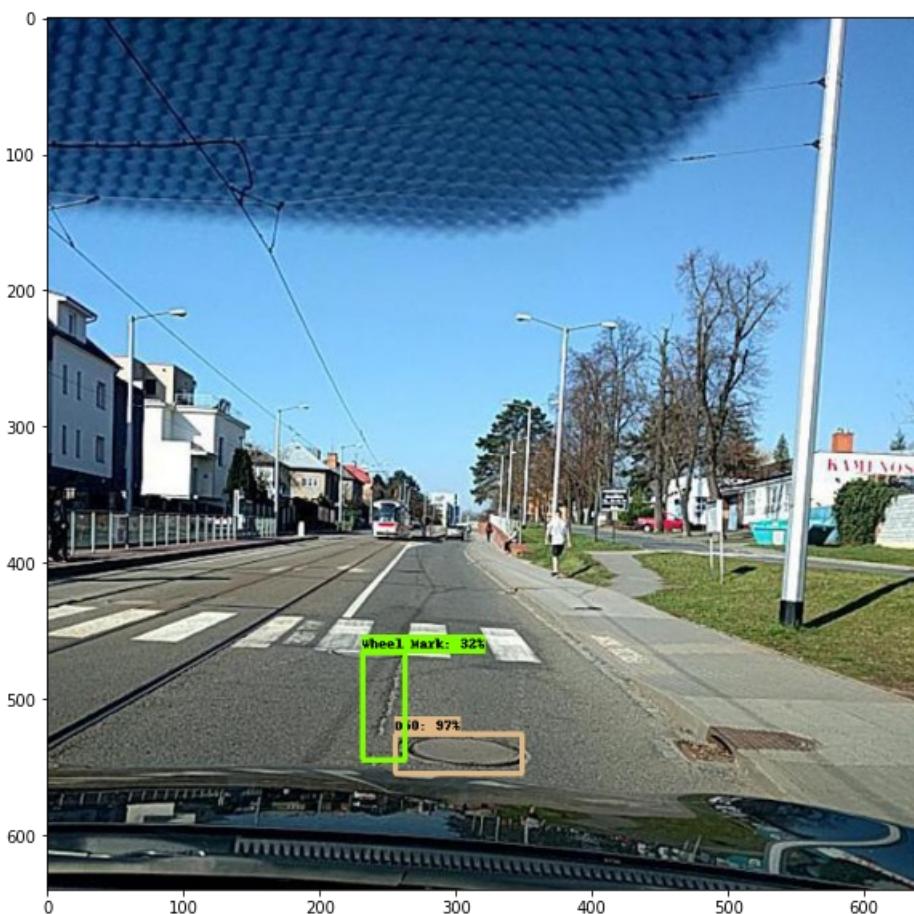














In []:

```
test_img_df = pd.read_csv('/content/content/data/label_csv/test_resized_label.csv')
test_img_df
```

In [21]:

```
grouped_resized = test_img_df.groupby('filename')
```

In [22]:

```
for image_path in TEST_IMAGE_PATHS[0:30]:
    fig, cell = plt.subplots(1, 2, figsize=(20,15))
    print('Running inference for {}... '.format(image_path), end='')

    image_np = load_image_into_numpy_array(image_path)
    print(image_np.shape)
    # Things to try:
    # Flip horizontally
    # image_np = np.fliplr(image_np).copy()

    # Convert image to grayscale
    # image_np = np.tile(
    #     np.mean(image_np, 2, keepdims=True), (1, 1, 3)).astype(np.uint8)

    # The input needs to be a tensor, convert it using `tf.convert_to_tensor`.
    input_tensor = tf.convert_to_tensor(image_np)
    # The model expects a batch of images, so add an axis with `tf.newaxis`.
    #print(input_tensor.shape)
    input_tensor = input_tensor[tf.newaxis, ...]
    #print(input_tensor.shape)
    # input_tensor = np.expand_dims(image_np, 0)
    detections = detect_fn(input_tensor)
    #print(detections)
    # All outputs are batches tensors.
    # Convert to numpy arrays, and take index [0] to remove the batch dimension.
    # We're only interested in the first num_detections.
    num_detections = int(detections.pop('num_detections'))
    detections = {key: value[0, :num_detections].numpy()
                  for key, value in detections.items()}
    detections['num_detections'] = num_detections
    detections['detection_classes'] = detections['detection_classes'].astype(np.int64)

    image_np_with_detections = image_np.copy()

    viz_utils.visualize_boxes_and_labels_on_image_array(
        image_np_with_detections,
        detections['detection_boxes'],
        detections['detection_classes'],
```

```

detections['detection_scores'],
category_index,
use_normalized_coordinates=True,
max_boxes_to_draw=200,
min_score_thresh=.25,
agnostic_mode=False)
cell[0].set_title('Detected Image : {}'.format(image_path.split('/')[-1]), fontsize = 16)
cell[0].imshow(image_np_with_detections)
#print('Done')

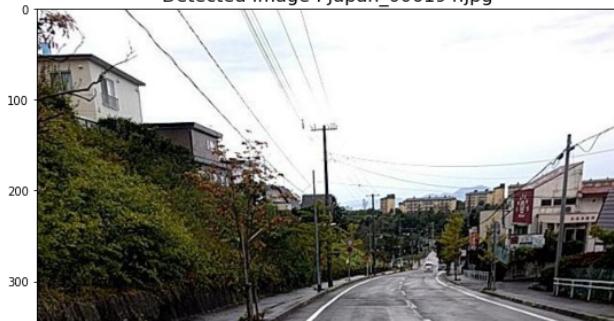
group_r_df = grouped_resized.get_group(image_path.split('/')[-1])
group_r_df = group_r_df.reset_index()
group_r_df = group_r_df.drop(['index'], axis=1)
bb_r_array = group_r_df.drop(['filename', 'width', 'height'], axis=1).values
resized_img = imageio.imread(image_path)
img_array1 = np.asarray(resized_img)
cell[1].imshow(img_array1)
#bbs_r = BoundingBoxesOnImage.from_xyxy_array(bb_r_array, shape=resized_img.shape)
#print(bb_r_array)
for box in bb_r_array:
    xmin = box[1]
    ymin = box[2]
    xmax = box[3]
    ymax = box[4]
    # color = colors[int(box[0])]
    label = '{}'.format(box[0])
    cell[1].set_title('Original Image : {}'.format(image_path.split('/')[-1]), fontsize = 16)
    cell[1].add_patch(plt.Rectangle((xmin, ymin), xmax-xmin, ymax-ymin, fill=False, linewidth=2))

    cell[1].text(xmin, ymin, label, size='large', color='black', bbox={'alpha':0.5})
plt.show()

```

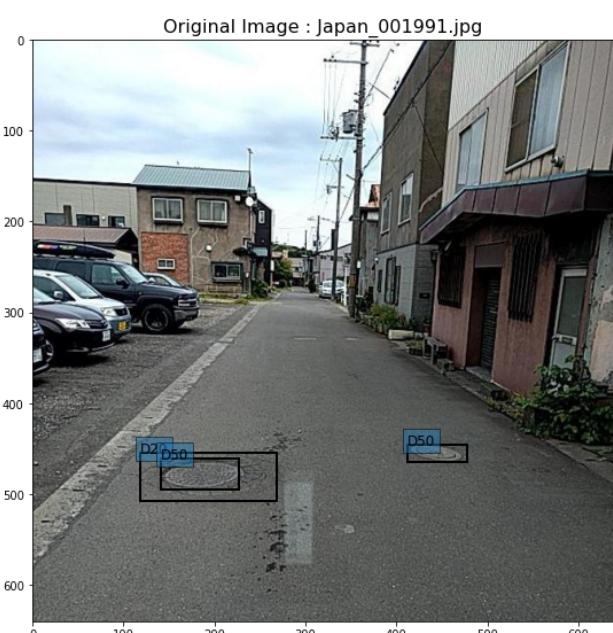
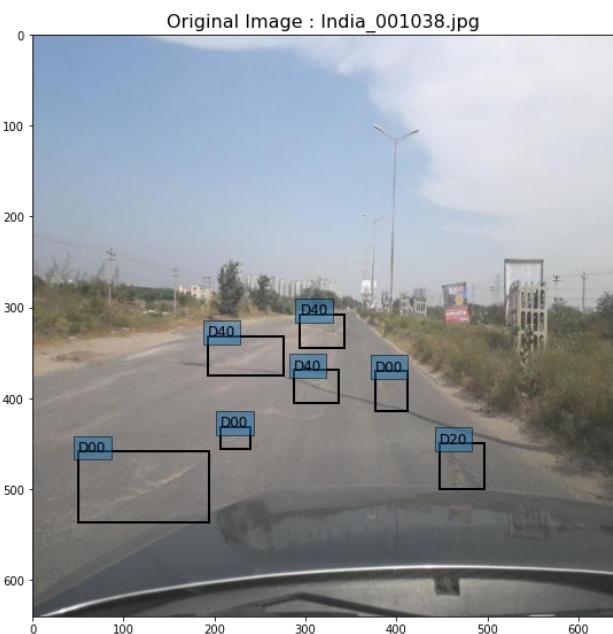
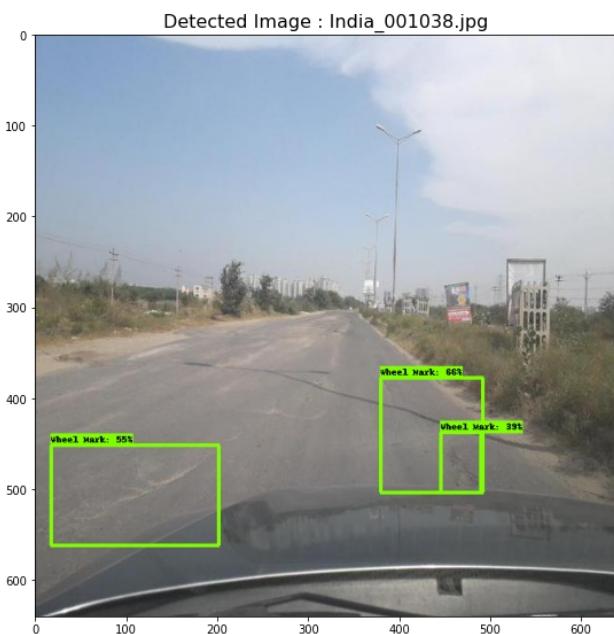
Running inference for /content/content/data/Images/test_images/Japan_006194.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/India_001038.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_001991.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_001197.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/India_009607.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Czech_003344.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/India_008609.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_005423.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_009098.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/India_003759.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_004062.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_011516.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_010146.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Czech_001115.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_008103.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_009681.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_000577.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_001541.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/India_001881.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/India_009890.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_010013.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/India_004117.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/India_000782.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_010286.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/India_004627.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_010936.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_012722.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/India_000174.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_000244.jpg... (640, 640, 3)
Running inference for /content/content/data/Images/test_images/Japan_012393.jpg... (640, 640, 3)

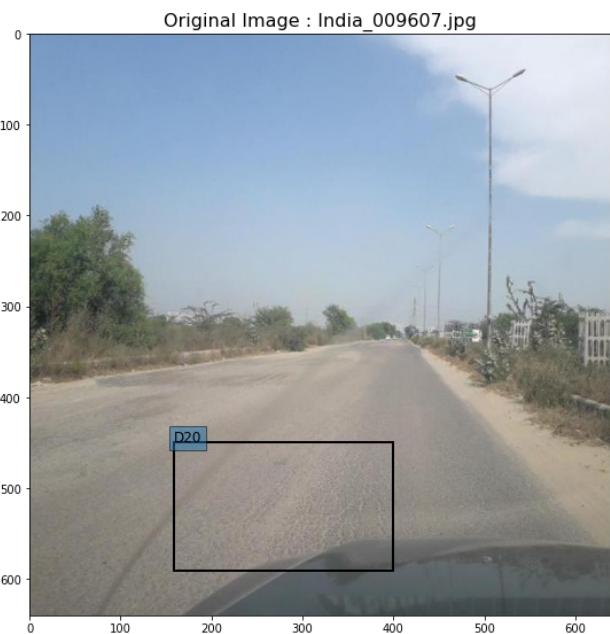
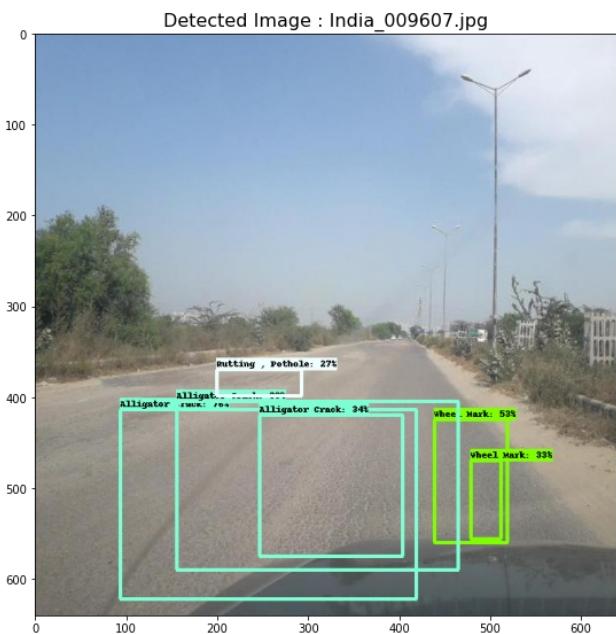
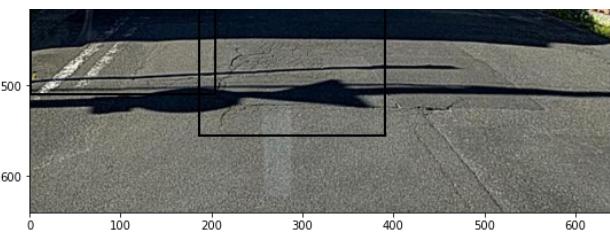
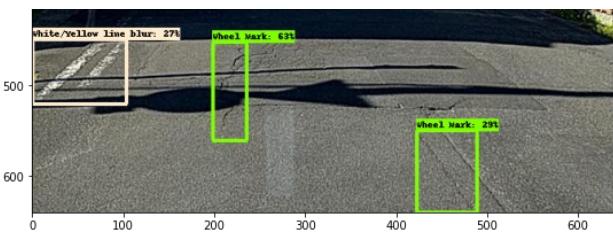
Detected Image : Japan_006194.jpg

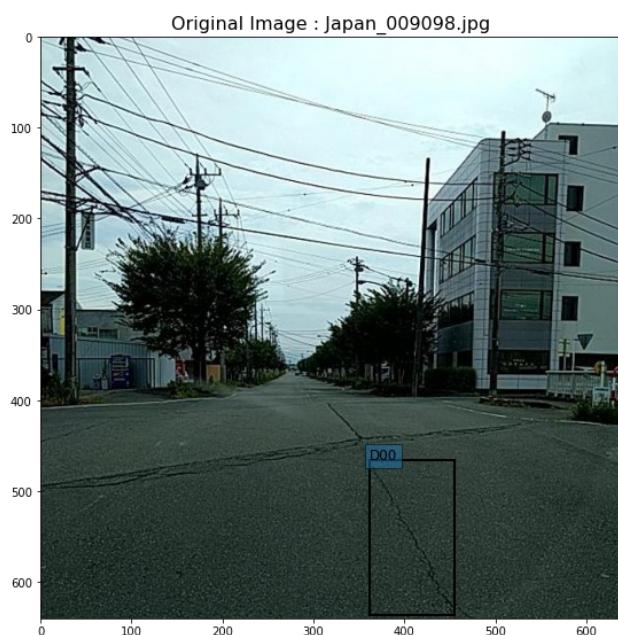
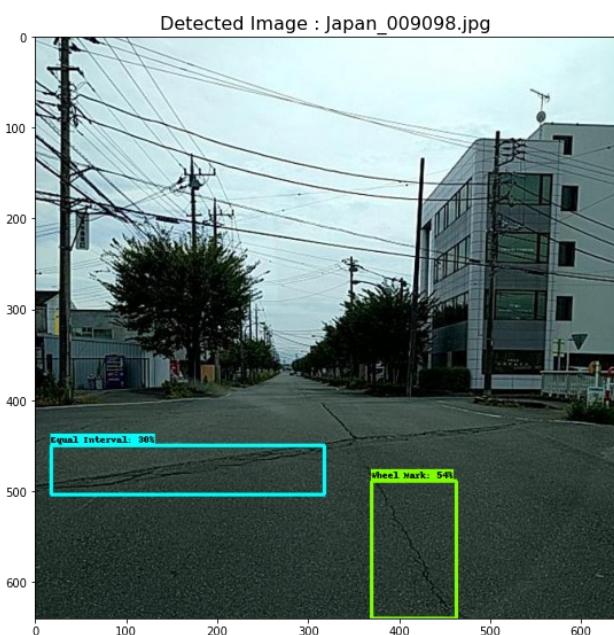
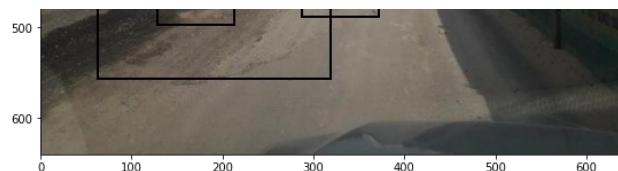
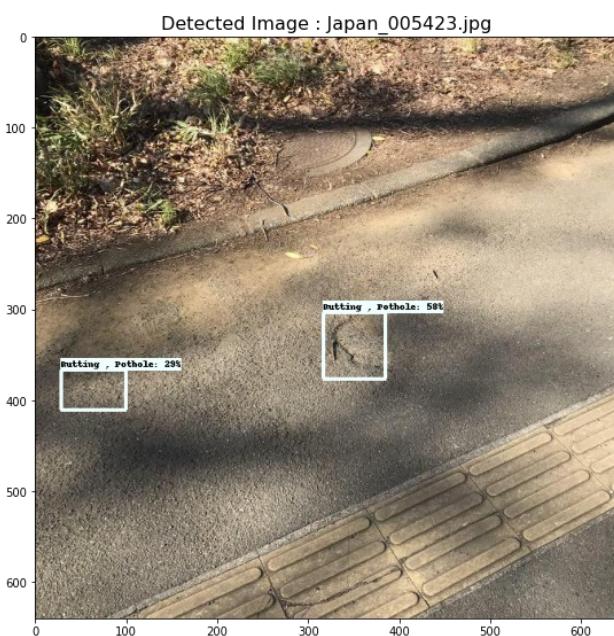
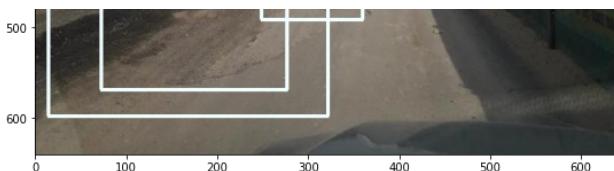


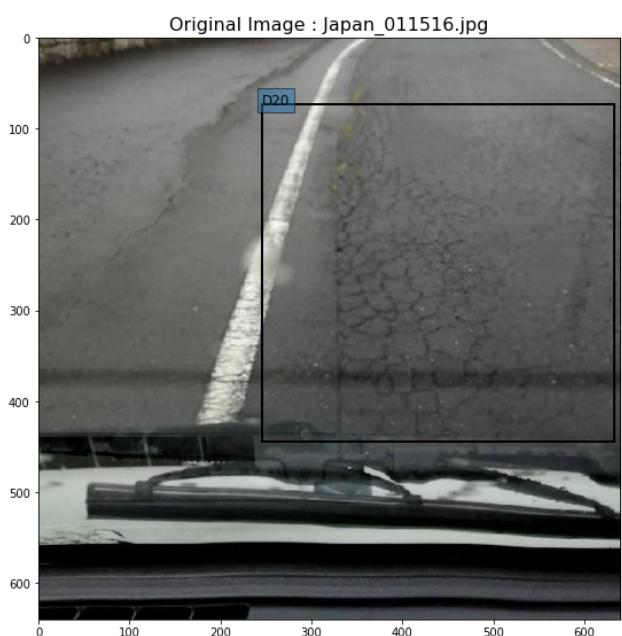
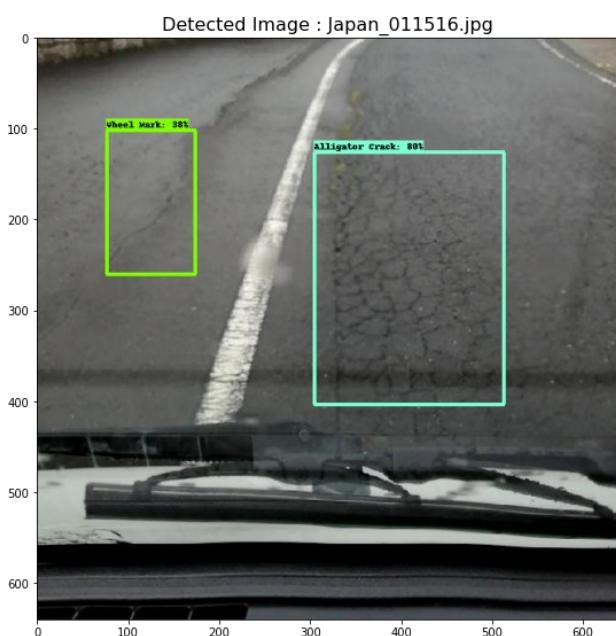
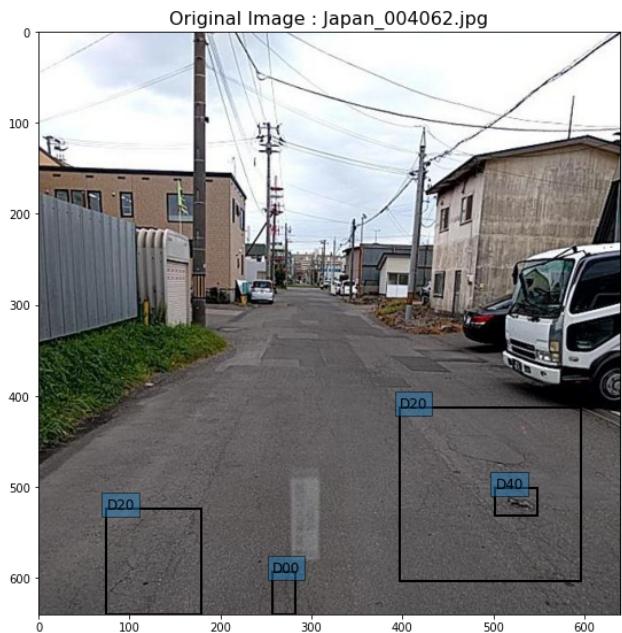
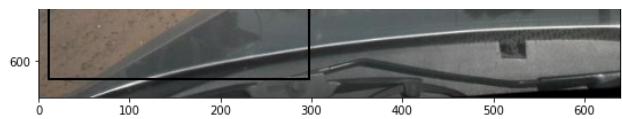
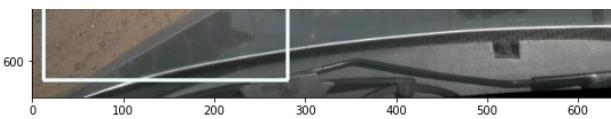
Original Image : Japan_006194.jpg

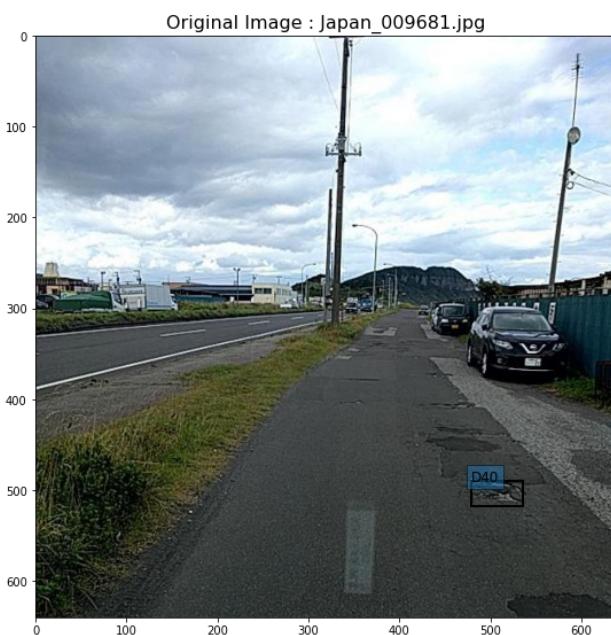
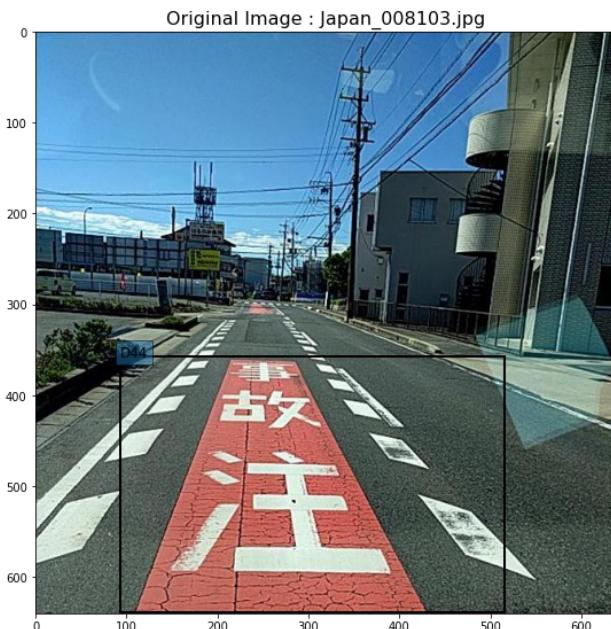
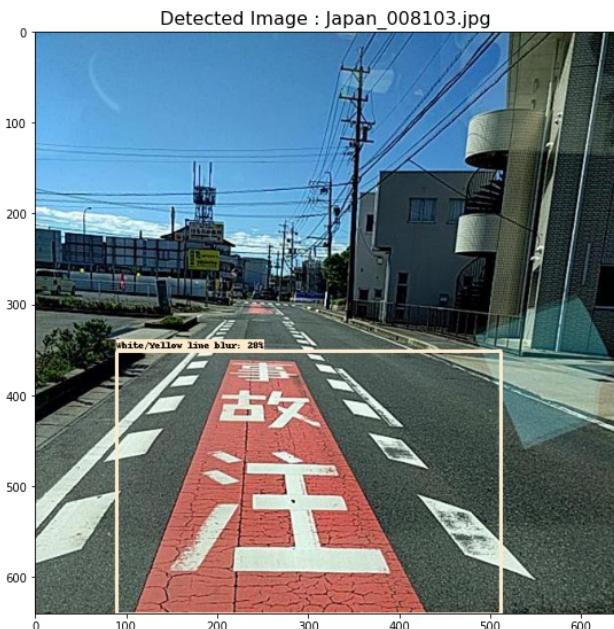
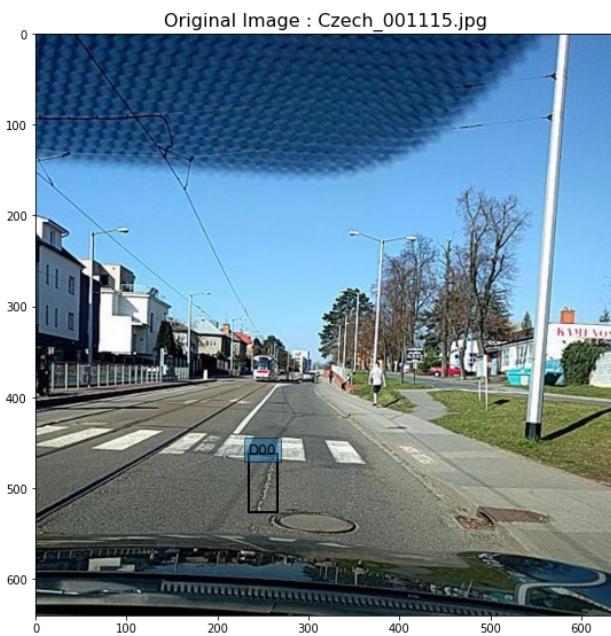
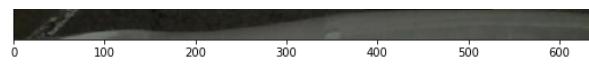
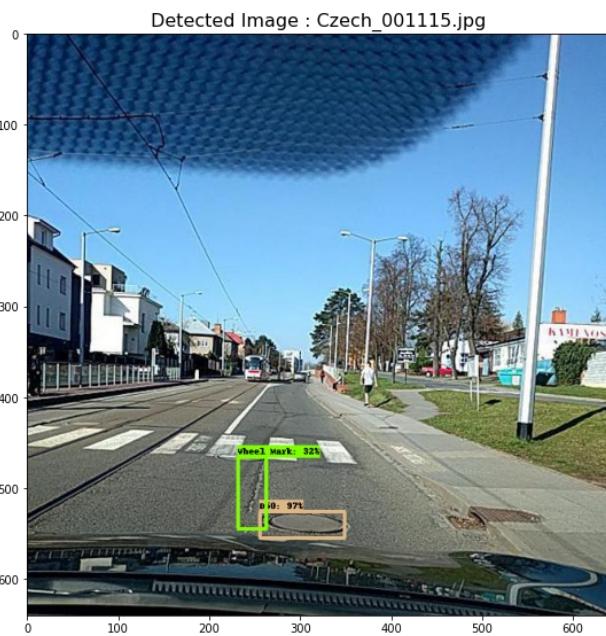
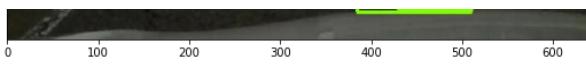




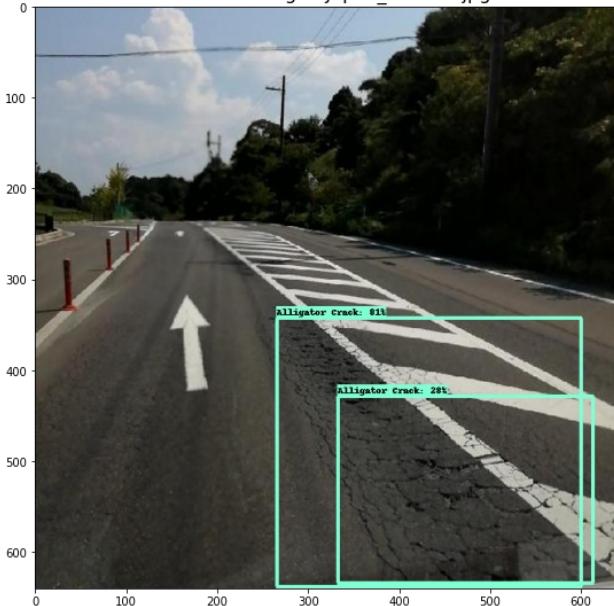




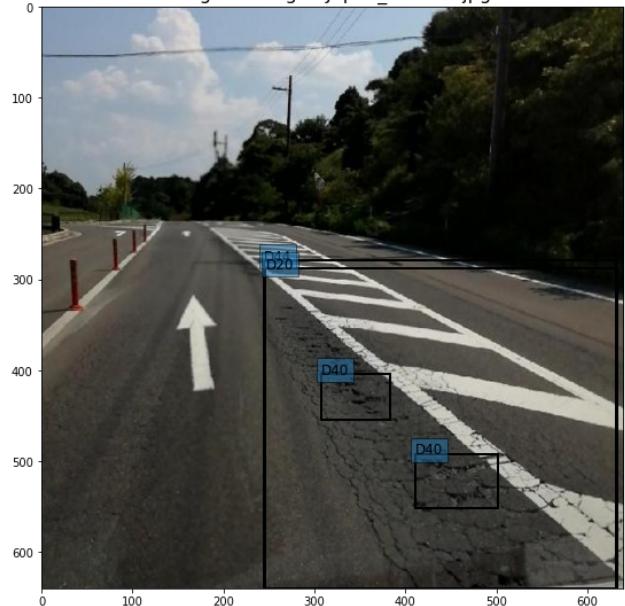




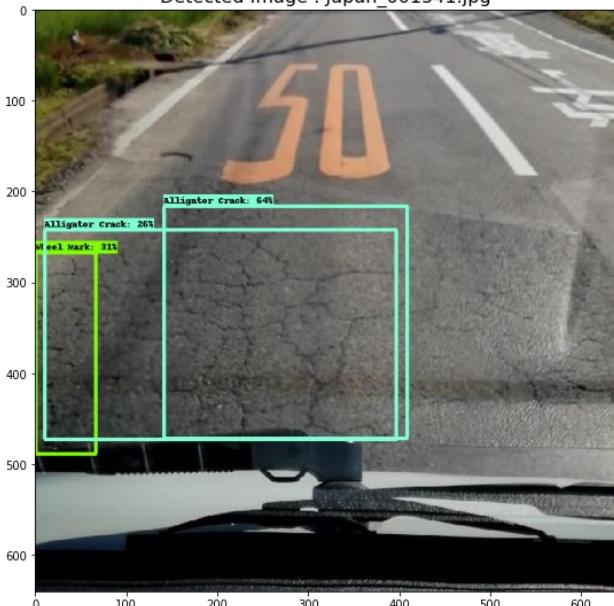
Detected Image : Japan_000577.jpg



Original Image : Japan_000577.jpg



Detected Image : Japan_001541.jpg



Original Image : Japan_001541.jpg



Detected Image : India_001881.jpg

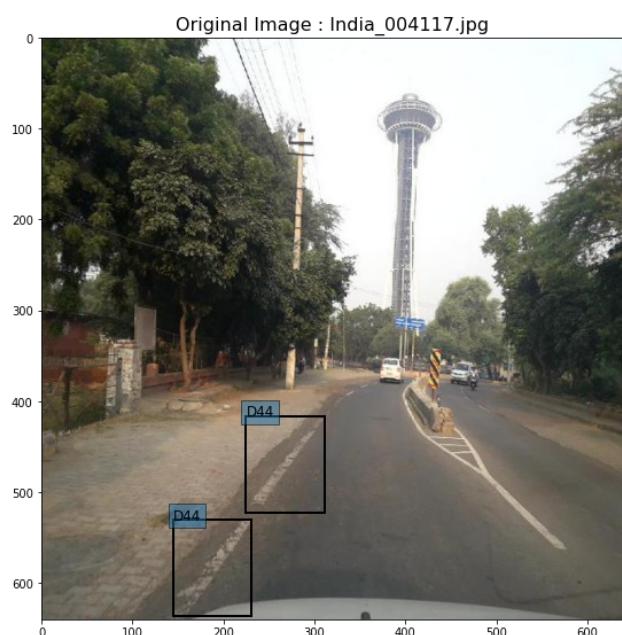
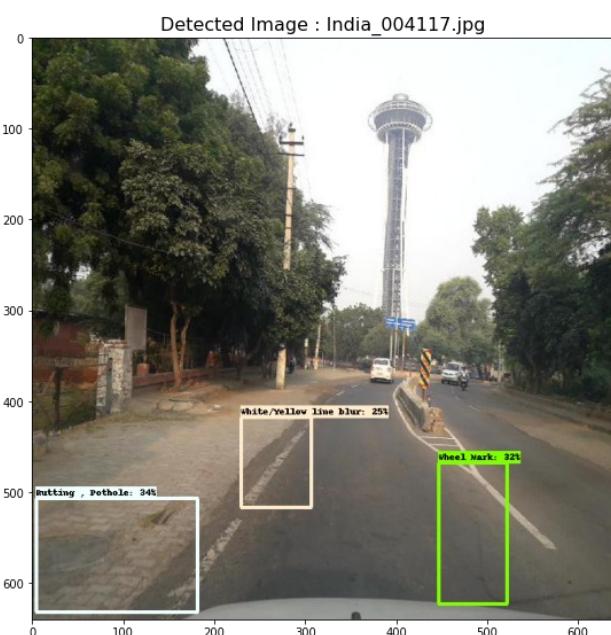


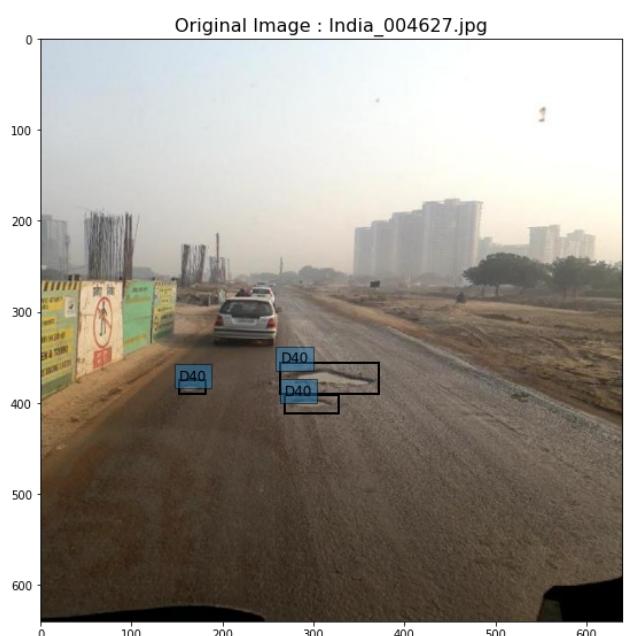
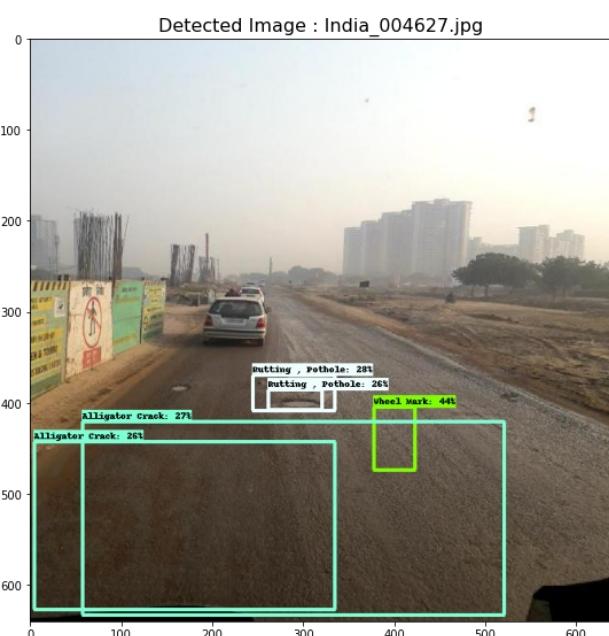
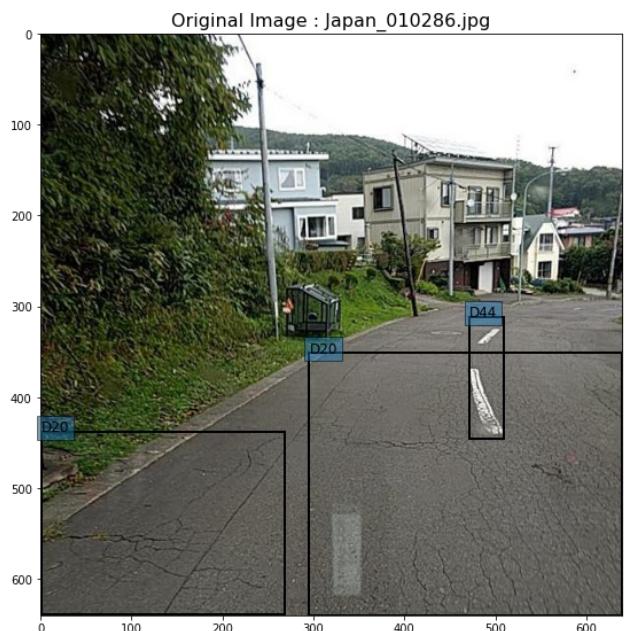
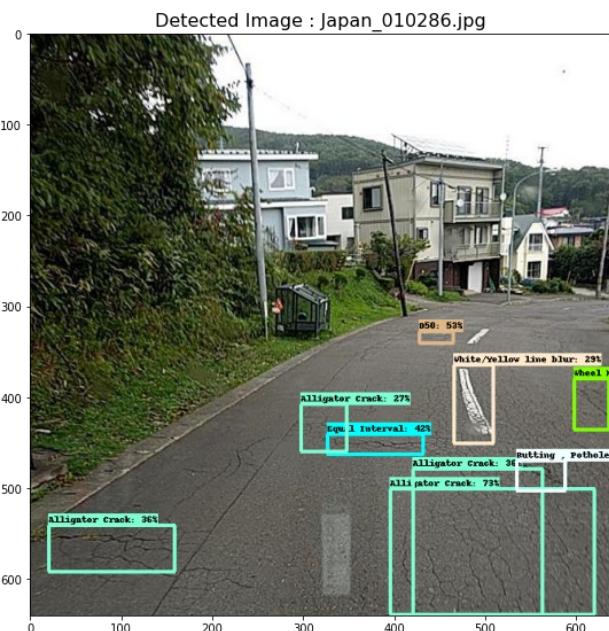
Original Image : India_001881.jpg

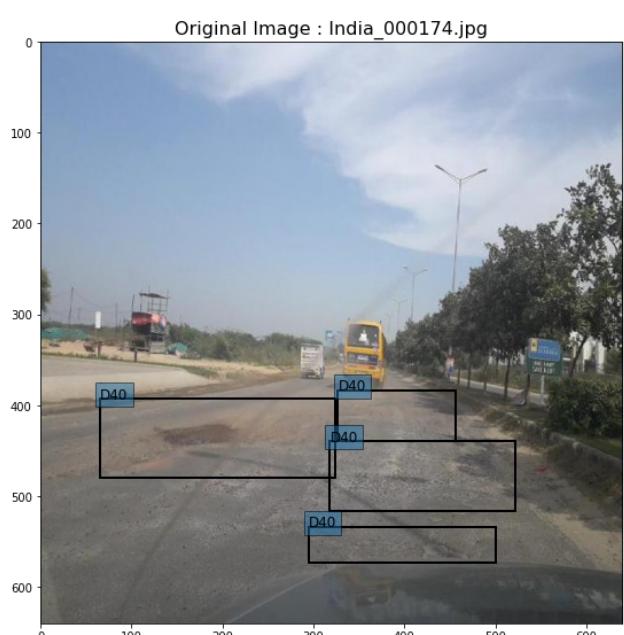
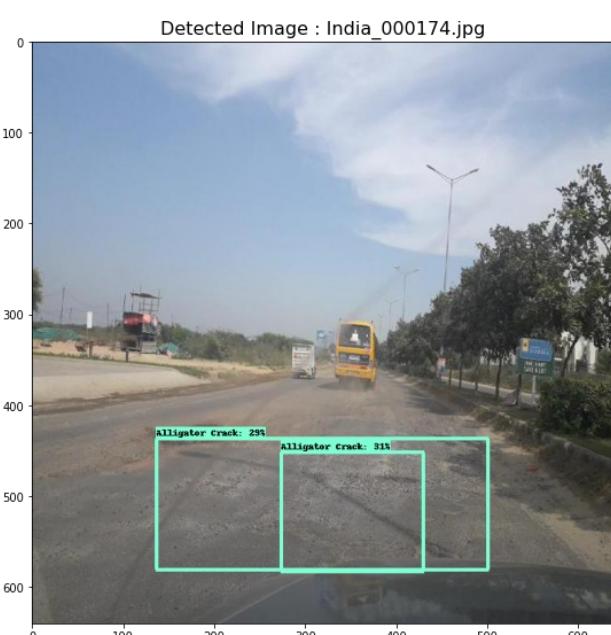
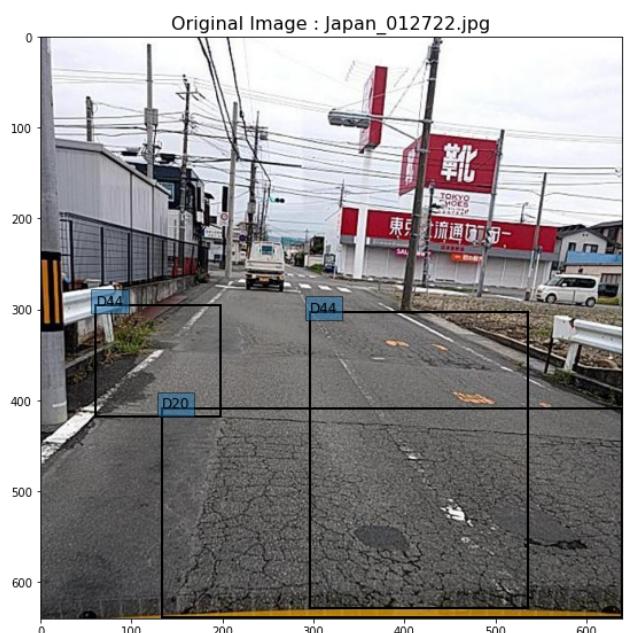


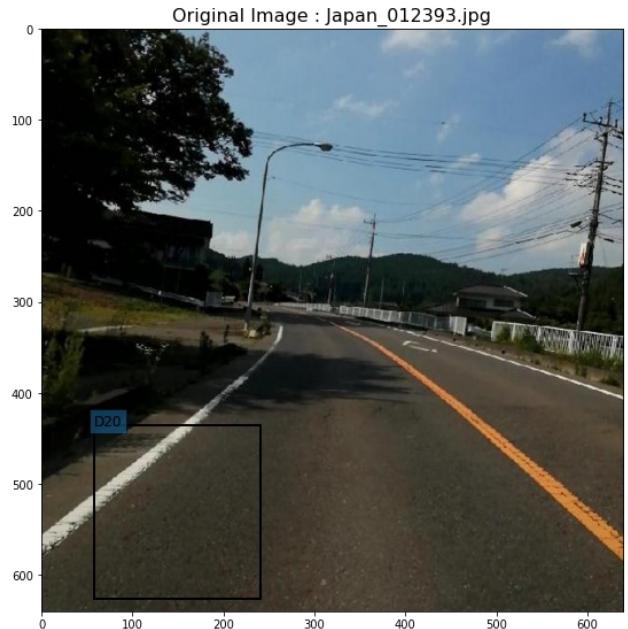
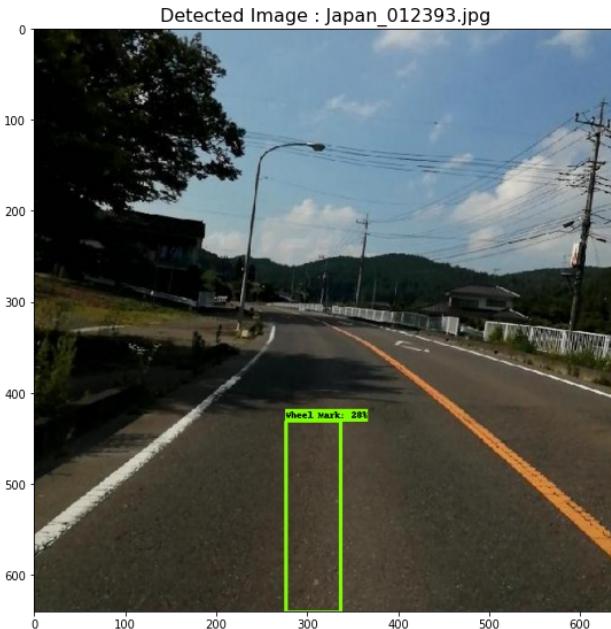
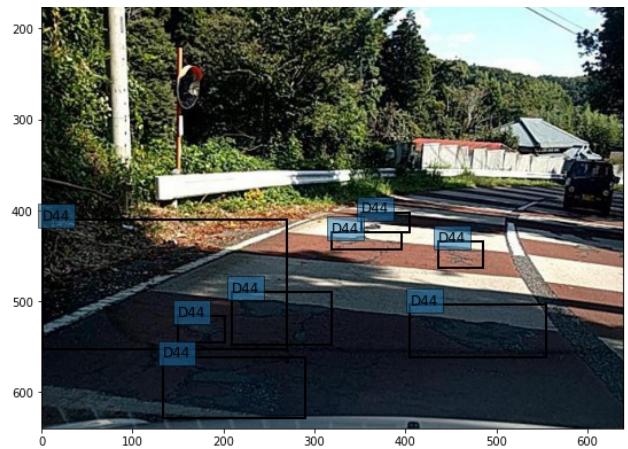
Detected Image : India_009890.jpg

Original Image : India_009890.jpg









Total Loss after 25k steps is 0.69 which quite good compare to SSD_mobilenet_v2.

It is quite accurate prediction object with high confidance with less step compare to ssd_mobilenet.

It is quite slower(As it has higher weights to train) compare to ssd and yolo.

In [24]:

```
start_time = time.time()
for image_path in TEST_IMAGE_PATHS[4:5]:

    print('Running inference for {}... '.format(image_path), end='')

    image_np = load_image_into_numpy_array(image_path)
    #print(image_np.shape)
    # Things to try:
    # Flip horizontally
    # image_np = np.fliplr(image_np).copy()

    # Convert image to grayscale
    # image_np = np.tile(
    #     np.mean(image_np, 2, keepdims=True), (1, 1, 3)).astype(np.uint8)

    # The input needs to be a tensor, convert it using `tf.convert_to_tensor`.
    input_tensor = tf.convert_to_tensor(image_np)
    # The model expects a batch of images, so add an axis with `tf.newaxis`.
    #print(input_tensor.shape)
    input_tensor = input_tensor[tf.newaxis, ...]
    #print(input_tensor.shape)
    # input_tensor = np.expand_dims(image_np, 0)
    detections = detect_fn(input_tensor)
    #print(detections)
    # All outputs are batches tensors.
```

```

# Convert to numpy arrays, and take index [0] to remove the batch dimension.
# We're only interested in the first num_detections.
num_detections = int(detections.pop('num_detections'))
detections = {key: value[0, :num_detections].numpy()
               for key, value in detections.items()}
detections['num_detections'] = num_detections
detections['detection_classes'] = detections['detection_classes'].astype(np.int64)

image_np_with_detections = image_np.copy()

viz_utils.visualize_boxes_and_labels_on_image_array(
    image_np_with_detections,
    detections['detection_boxes'],
    detections['detection_classes'],
    detections['detection_scores'],
    category_index,
    use_normalized_coordinates=True,
    max_boxes_to_draw=200,
    min_score_thresh=.30,
    agnostic_mode=False)

plt.figure(figsize=(10,10))
plt.imshow(image_np_with_detections)
#print ('Done')
plt.show()
end_time = time.time()
print('Time taken to predict is : {}sec'.format(end_time-start_time))

```

Running inference for /content/content/data/Images/test_images/India_009607.jpg... Time taken to predict is : 0.6506824493408203sec

