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Evaluation

Runs the TensorFlow Evaluation script

v1.0

In [1]:
```python
# Set model path

#PATH_TO_MODEL = "faster_rcnn_resnet101_v1_640x640_coco17_tpu-8"
PATH_TO_MODEL = "faster_rcnn_resnet101_v1_1024x1024_coco17_tpu-8"
#PATH_TO_MODEL = "efficientdet_d3_coco17_tpu-32"
#PATH_TO_MODEL = "efficientdet_d4_coco17_tpu-32"
#PATH_TO_MODEL = "centernet_hg104_1024x1024_coco17_tpu-32"
```

In [2]:
```
!set CUDA_VISIBLE_DEVICES="-1" & python model_main_tf2.py --pipeline_config_p
```

```
WARNING:tensorflow:Forced number of epochs for all eval validations to be
1.
W0811 12:23:51.528485 140388479127936 model_lib_v2.py:920] Forced number of
epochs for all eval validations to be 1.
INFO:tensorflow:Maybe overwriting sample_1_of_n_eval_examples: None
I0811 12:23:51.528578 140388479127936 config_util.py:552] Maybe overwriting
sample_1_of_n_eval_examples: None
INFO:tensorflow:Maybe overwriting use_bfloat16: False
I0811 12:23:51.528655 140388479127936 config_util.py:552] Maybe overwriting
use_bfloat16: False
INFO:tensorflow:Maybe overwriting eval_num_epochs: 1
I0811 12:23:51.528690 140388479127936 config_util.py:552] Maybe overwriting
eval_num_epochs: 1
WARNING:tensorflow:Expected number of evaluation epochs is 1, but instead e
ncountered `eval_on_train_input_config.num_epochs` = 0. Overwriting `num_ep
ochs` to 1.
W0811 12:23:51.528736 140388479127936 model_lib_v2.py:935] Expected number
of evaluation epochs is 1, but instead encountered `eval_on_train_input_con
fig.num_epochs` = 0. Overwriting `num_epochs` to 1.
2021-08-11 12:23:51.543335: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcuda.so.1
2021-08-11 12:23:51.574222: I tensorflow/stream_executor/cuda/cuda_gpu_exec
utor.cc:981] successful NUMA node read from SysFS had negative value (-1),
but there must be at least one NUMA node, so returning NUMA node zero
2021-08-11 12:23:51.574741: I tensorflow/core/common_runtime/gpu/gpu_devic
e.cc:1561] Found device 0 with properties:
pciBusID: 0000:01:00.0 name: NVIDIA GeForce RTX 2080 Ti computeCapability:
7.5
coreClock: 1.65GHz coreCount: 68 deviceMemorySize: 10.76GiB deviceMemoryBan
```

```
dwidth: 573.69GiB/s
2021-08-11 12:23:51.574862: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcudart.so.10.1
2021-08-11 12:23:51.575705: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcublas.so.10
2021-08-11 12:23:51.576562: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcufft.so.10
2021-08-11 12:23:51.576696: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcurand.so.10
2021-08-11 12:23:51.577667: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcusolver.so.10
2021-08-11 12:23:51.578160: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcusparse.so.10
2021-08-11 12:23:51.580103: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcudnn.so.7
2021-08-11 12:23:51.580176: I tensorflow/stream_executor/cuda/cuda_gpu_exec
utor.cc:981] successful NUMA node read from SysFS had negative value (-1),
but there must be at least one NUMA node, so returning NUMA node zero
2021-08-11 12:23:51.580486: I tensorflow/stream_executor/cuda/cuda_gpu_exec
utor.cc:981] successful NUMA node read from SysFS had negative value (-1),
but there must be at least one NUMA node, so returning NUMA node zero
2021-08-11 12:23:51.580743: I tensorflow/core/common_runtime/gpu/gpu_devic
e.cc:1703] Adding visible gpu devices: 0
2021-08-11 12:23:51.580910: I tensorflow/core/platform/cpu_feature_guard.c
c:143] Your CPU supports instructions that this TensorFlow binary was not c
ompiled to use: SSE4.1 SSE4.2 AVX AVX2 FMA
2021-08-11 12:23:51.602787: I tensorflow/core/platform/profile_utils/cpu_ut
ils.cc:102] CPU Frequency: 3600000000 Hz
2021-08-11 12:23:51.603361: I tensorflow/compiler/xla/service/service.cc:16
8] XLA service 0x55fc7360d940 initialized for platform Host (this does not
guarantee that XLA will be used). Devices:
2021-08-11 12:23:51.603378: I tensorflow/compiler/xla/service/service.cc:17
6]   StreamExecutor device (0): Host, Default Version
2021-08-11 12:23:51.603562: I tensorflow/stream_executor/cuda/cuda_gpu_exec
utor.cc:981] successful NUMA node read from SysFS had negative value (-1),
but there must be at least one NUMA node, so returning NUMA node zero
2021-08-11 12:23:51.604188: I tensorflow/core/common_runtime/gpu/gpu_devic
e.cc:1561] Found device 0 with properties:
pciBusID: 0000:01:00.0 name: NVIDIA GeForce RTX 2080 Ti computeCapability:
7.5
coreClock: 1.65GHz coreCount: 68 deviceMemorySize: 10.76GiB deviceMemoryBan
dwidth: 573.69GiB/s
2021-08-11 12:23:51.604245: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcudart.so.10.1
2021-08-11 12:23:51.604256: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcublas.so.10
2021-08-11 12:23:51.604265: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcufft.so.10
2021-08-11 12:23:51.604273: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcurand.so.10
2021-08-11 12:23:51.604283: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcusolver.so.10
2021-08-11 12:23:51.604292: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcusparse.so.10
2021-08-11 12:23:51.604302: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcudnn.so.7
2021-08-11 12:23:51.604347: I tensorflow/stream_executor/cuda/cuda_gpu_exec
utor.cc:981] successful NUMA node read from SysFS had negative value (-1),
but there must be at least one NUMA node, so returning NUMA node zero
2021-08-11 12:23:51.604642: I tensorflow/stream_executor/cuda/cuda_gpu_exec
utor.cc:981] successful NUMA node read from SysFS had negative value (-1),
but there must be at least one NUMA node, so returning NUMA node zero
2021-08-11 12:23:51.605007: I tensorflow/core/common_runtime/gpu/gpu_devic
e.cc:1703] Adding visible gpu devices: 0
2021-08-11 12:23:51.605027: I tensorflow/stream_executor/platform/default/d
```

```
so_loader.cc:44] Successfully opened dynamic library libcudart.so.10.1
2021-08-11 12:23:51.675044: I tensorflow/core/common_runtime/gpu/gpu_devic
e.cc:1102] Device interconnect StreamExecutor with strength 1 edge matrix:
2021-08-11 12:23:51.675064: I tensorflow/core/common_runtime/gpu/gpu_devic
e.cc:1108]      0
2021-08-11 12:23:51.675068: I tensorflow/core/common_runtime/gpu/gpu_devic
e.cc:1121] 0:   N
2021-08-11 12:23:51.675192: I tensorflow/stream_executor/cuda/cuda_gpu_exec
utor.cc:981] successful NUMA node read from SysFS had negative value (-1),
but there must be at least one NUMA node, so returning NUMA node zero
2021-08-11 12:23:51.675493: I tensorflow/stream_executor/cuda/cuda_gpu_exec
utor.cc:981] successful NUMA node read from SysFS had negative value (-1),
but there must be at least one NUMA node, so returning NUMA node zero
2021-08-11 12:23:51.675763: I tensorflow/stream_executor/cuda/cuda_gpu_exec
utor.cc:981] successful NUMA node read from SysFS had negative value (-1),
but there must be at least one NUMA node, so returning NUMA node zero
2021-08-11 12:23:51.676020: I tensorflow/core/common_runtime/gpu/gpu_devic
e.cc:1247] Created TensorFlow device (/job:localhost/replica:0/task:0/devic
e:GPU:0 with 9892 MB memory) -> physical GPU (device: 0, name: NVIDIA GeFor
ce RTX 2080 Ti, pci bus id: 0000:01:00.0, compute capability: 7.5)
2021-08-11 12:23:51.677129: I tensorflow/compiler/xla/service/service.cc:16
8] XLA service 0x55fc751dd1c0 initialized for platform CUDA (this does not
guarantee that XLA will be used). Devices:
2021-08-11 12:23:51.677139: I tensorflow/compiler/xla/service/service.cc:17
6]   StreamExecutor device (0): NVIDIA GeForce RTX 2080 Ti, Compute Capabil
ity 7.5
WARNING:tensorflow:num_readers has been reduced to 1 to match input file sh
ards.
W0811 12:23:51.679317 140388479127936 dataset_builder.py:83] num_readers ha
s been reduced to 1 to match input file shards.
WARNING:tensorflow:From /home/msc1/anaconda3/envs/Object-Detection-API/lib/
python3.7/site-packages/object_detection/builders/dataset_builder.py:100: p
arallel_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_p
arallel_calls=tf.data.experimental.AUTOTUNE)` instead. If sloppy execution
is desired, use `tf.data.Options.experimental_deterministic`.
W0811 12:23:51.680310 140388479127936 deprecation.py:323] From /home/msc1/a
naconda3/envs/Object-Detection-API/lib/python3.7/site-packages/object_detec
tion/builders/dataset_builder.py:100: parallel_interleave (from tensorflow.
python.data.experimental.ops.interleave_ops) is deprecated and will be remo
ved in a future version.
Instructions for updating:
Use `tf.data.Dataset.interleave(map_func, cycle_length, block_length, num_p
arallel_calls=tf.data.experimental.AUTOTUNE)` instead. If sloppy execution
is desired, use `tf.data.Options.experimental_deterministic`.
WARNING:tensorflow:From /home/msc1/anaconda3/envs/Object-Detection-API/lib/
python3.7/site-packages/object_detection/builders/dataset_builder.py:175: D
atasetV1.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()
W0811 12:23:51.689934 140388479127936 deprecation.py:323] From /home/msc1/a
naconda3/envs/Object-Detection-API/lib/python3.7/site-packages/object_detec
tion/builders/dataset_builder.py:175: DatasetV1.map_with_legacy_function (f
rom tensorflow.python.data.ops.dataset_ops) is deprecated and will be remov
ed in a future version.
Instructions for updating:
Use `tf.data.Dataset.map()
WARNING:tensorflow:From /home/msc1/anaconda3/envs/Object-Detection-API/lib/
python3.7/site-packages/object_detection/inputs.py:79: sparse_to_dense (fro
m 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.
W0811 12:23:55.336460 140388479127936 deprecation.py:323] From /home/msc1/a
naconda3/envs/Object-Detection-API/lib/python3.7/site-packages/object_detec
tion/inputs.py:79: 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 /home/msc1/anaconda3/envs/Object-Detection-API/lib/
python3.7/site-packages/object_detection/inputs.py:259: to_float (from tens
orflow.python.ops.math_ops) is deprecated and will be removed in a future v
ersion.
Instructions for updating:
Use `tf.cast` instead.
W0811 12:23:56.387015 140388479127936 deprecation.py:323] From /home/msc1/a
naconda3/envs/Object-Detection-API/lib/python3.7/site-packages/object_detec
tion/inputs.py:259: to_float (from tensorflow.python.ops.math_ops) is depre
cated and will be removed in a future version.
Instructions for updating:
Use `tf.cast` instead.
INFO:tensorflow:Waiting for new checkpoint at training/TF2/training/faster_
rcnn_resnet101_v1_1024x1024_coco17_tpu-8
I0811 12:23:58.884754 140388479127936 checkpoint_utils.py:125] Waiting for
new checkpoint at training/TF2/training/faster_rcnn_resnet101_v1_1024x1024_
coco17_tpu-8
INFO:tensorflow:Found new checkpoint at training/TF2/training/faster_rcnn_r
esnet101_v1_1024x1024_coco17_tpu-8/ckpt-29
I0811 12:23:58.885788 140388479127936 checkpoint_utils.py:134] Found new ch
eckpoint at training/TF2/training/faster_rcnn_resnet101_v1_1024x1024_coco17
_tpu-8/ckpt-29
INFO:tensorflow:depth of additional conv before box predictor: 0
I0811 12:24:05.315055 140388479127936 convolutional_keras_box_predictor.py:
154] depth of additional conv before box predictor: 0
WARNING:tensorflow:From /home/msc1/anaconda3/envs/Object-Detection-API/lib/
python3.7/site-packages/object_detection/utils/model_util.py:57: Tensor.exp
erimental_ref (from tensorflow.python.framework.ops) is deprecated and will
be removed in a future version.
Instructions for updating:
Use ref() instead.
W0811 12:24:11.608661 140388479127936 deprecation.py:323] From /home/msc1/a
naconda3/envs/Object-Detection-API/lib/python3.7/site-packages/object_detec
tion/utils/model_util.py:57: Tensor.experimental_ref (from tensorflow.pytho
n.framework.ops) is deprecated and will be removed in a future version.
Instructions for updating:
Use ref() instead.
WARNING:tensorflow:From /home/msc1/anaconda3/envs/Object-Detection-API/lib/
python3.7/site-packages/object_detection/core/losses.py:378: softmax_cross_
entropy_with_logits (from tensorflow.python.ops.nn_ops) is deprecated and w
ill 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`.

W0811 12:24:15.600877 140388479127936 deprecation.py:323] From /home/msc1/a
naconda3/envs/Object-Detection-API/lib/python3.7/site-packages/object_detec
tion/core/losses.py:378: softmax_cross_entropy_with_logits (from tensorflo
w.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`.

WARNING:tensorflow:From /home/msc1/anaconda3/envs/Object-Detection-API/lib/
python3.7/site-packages/object_detection/eval_util.py:854: to_int64 (from t
ensorflow.python.ops.math_ops) is deprecated and will be removed in a futur
e version.
Instructions for updating:
Use `tf.cast` instead.
W0811 12:24:20.393583 140388479127936 deprecation.py:323] From /home/msc1/a
naconda3/envs/Object-Detection-API/lib/python3.7/site-packages/object_detec
tion/eval_util.py:854: to_int64 (from tensorflow.python.ops.math_ops) is de
precated and will be removed in a future version.
Instructions for updating:
Use `tf.cast` instead.
2021-08-11 12:24:23.800385: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcublas.so.10
2021-08-11 12:24:23.916276: I tensorflow/stream_executor/platform/default/d
so_loader.cc:44] Successfully opened dynamic library libcudnn.so.7
2021-08-11 12:24:24.524632: W tensorflow/stream_executor/gpu/asm_compiler.c
c:81] Running ptxas --version returned 256
2021-08-11 12:24:24.563181: W tensorflow/stream_executor/gpu/redzone_alloca
tor.cc:314] Internal: ptxas exited with non-zero error code 256, output:
Relying on driver to perform ptx compilation.
Modify $PATH to customize ptxas location.
This message will be only logged once.
INFO:tensorflow:Finished eval step 0
I0811 12:24:41.312227 140388479127936 model_lib_v2.py:794] Finished eval st
ep 0
WARNING:tensorflow:From /home/msc1/anaconda3/envs/Object-Detection-API/lib/
python3.7/site-packages/object_detection/utils/visualization_utils.py:618:
py_func (from tensorflow.python.ops.script_ops) is deprecated and will be r
emoved 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 tensor
s
    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_fun
c
    (it is not differentiable, and manipulates numpy arrays). It drops the
    stateful argument making all functions stateful.

W0811 12:24:41.321521 140388479127936 deprecation.py:323] From /home/msc1/a
naconda3/envs/Object-Detection-API/lib/python3.7/site-packages/object_detec
tion/utils/visualization_utils.py:618: 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 tensor
s
    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_fun
c
    (it is not differentiable, and manipulates numpy arrays). It drops the
    stateful argument making all functions stateful.

```
INFO:tensorflow:Performing evaluation on 18 images.
I0811 12:24:46.366227 140388479127936 coco_evaluation.py:237] Performing ev
aluation on 18 images.
creating index...
index created!
INFO:tensorflow:Loading and preparing annotation results...
I0811 12:24:46.368483 140388479127936 coco_tools.py:116] Loading and prepar
ing annotation results...
INFO:tensorflow:DONE (t=0.00s)
I0811 12:24:46.372807 140388479127936 coco_tools.py:138] DONE (t=0.00s)
creating index...
index created!
Traceback (most recent call last):
  File "model_main_tf2.py", line 113, in <module>
    tf.compat.v1.app.run()
  File "/home/msc1/anaconda3/envs/Object-Detection-API/lib/python3.7/site-p
ackages/tensorflow/python/platform/app.py", line 40, in run
    _run(main=main, argv=argv, flags_parser=_parse_flags_tolerate_undef)
  File "/home/msc1/anaconda3/envs/Object-Detection-API/lib/python3.7/site-p
ackages/absl/app.py", line 303, in run
    _run_main(main, args)
  File "/home/msc1/anaconda3/envs/Object-Detection-API/lib/python3.7/site-p
ackages/absl/app.py", line 251, in _run_main
    sys.exit(main(argv))
  File "model_main_tf2.py", line 88, in main
    wait_interval=300, timeout=FLAGS.eval_timeout)
  File "/home/msc1/anaconda3/envs/Object-Detection-API/lib/python3.7/site-p
ackages/object_detection/model_lib_v2.py", line 979, in eval_continuously
    global_step=global_step)
  File "/home/msc1/anaconda3/envs/Object-Detection-API/lib/python3.7/site-p
ackages/object_detection/model_lib_v2.py", line 843, in eager_eval_loop
    eval_metrics.update(evaluator.evaluate())
  File "/home/msc1/anaconda3/envs/Object-Detection-API/lib/python3.7/site-p
ackages/object_detection/metrics/coco_evaluation.py", line 247, in evaluate
    coco_wrapped_groundtruth, coco_wrapped_detections, agnostic_mode=False)
  File "/home/msc1/anaconda3/envs/Object-Detection-API/lib/python3.7/site-p
ackages/object_detection/metrics/coco_tools.py", line 178, in __init__
    cocoeval.COCOeval.__init__(self, groundtruth, detections, iouType=iou_t
ype)
  File "/home/msc1/anaconda3/envs/Object-Detection-API/lib/python3.7/site-p
ackages/pycocotools/cocoeval.py", line 76, in __init__
    self.params = Params(iouType=iouType) # parameters
  File "/home/msc1/anaconda3/envs/Object-Detection-API/lib/python3.7/site-p
ackages/pycocotools/cocoeval.py", line 527, in __init__
    self.setDetParams()
  File "/home/msc1/anaconda3/envs/Object-Detection-API/lib/python3.7/site-p
ackages/pycocotools/cocoeval.py", line 507, in setDetParams
    self.iouThrs = np.linspace(.5, 0.95, np.round((0.95 - .5) / .05) + 1, e
ndpoint=True)
  File "<__array_function__ internals>", line 6, in linspace
  File "/home/msc1/anaconda3/envs/Object-Detection-API/lib/python3.7/site-p
ackages/numpy/core/function_base.py", line 113, in linspace
    num = operator.index(num)
TypeError: 'numpy.float64' object cannot be interpreted as an integer
```

In [ ]:
```
!python model_main_tf2.py --pipeline_config_path=training/TF2/training/{PATH_
```

In [ ]:

In [ ]: