
```
%tensorflow_version 1.x
```

```
☞ TensorFlow 1.x selected.
```

```
from __future__ import absolute_import
from __future__ import division
from __future__ import print_function
```

```
# Imports
import numpy as np
import tensorflow as tf
import matplotlib.pyplot as plt
tf.logging.set_verbosity(tf.logging.INFO)
```

```
%matplotlib inline
np.random.seed(1)
```

```
# Loading the data (MNIST)
mnist = tf.contrib.learn.datasets.load_dataset("mnist")
train_data = mnist.train.images # Returns np.array
train_labels = np.asarray(mnist.train.labels, dtype=np.int32)
eval_data = mnist.test.images # Returns np.array
eval_labels = np.asarray(mnist.test.labels, dtype=np.int32)
print(train_data.shape)
```

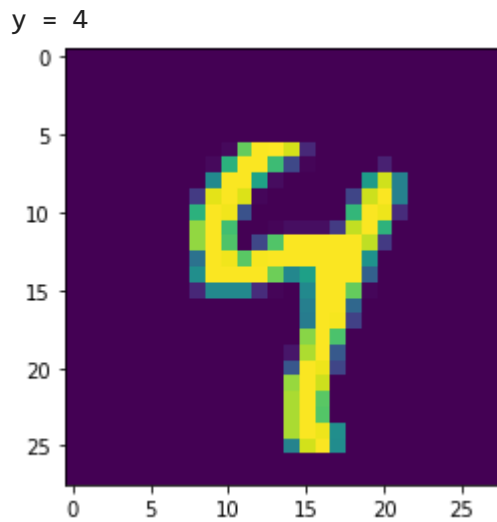
```
☞
```

WARNING:tensorflow:
The TensorFlow contrib module will not be included in TensorFlow 2.0.
For more information, please see:
* <https://github.com/tensorflow/community/blob/master/rfcs/20180907-contrib-sunset>.
* <https://github.com/tensorflow/addons>
* <https://github.com/tensorflow/io> (for I/O related ops)
If you depend on functionality not listed there, please file an issue.

WARNING:tensorflow:From <ipython-input-3-573f76dee5a1>:1: load_dataset (from tensorflow
Instructions for updating:
Please use tf.data.
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_core/contrib/learn/py
Instructions for updating:
Please use alternatives such as official/mnist/dataset.py from tensorflow/models.
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_core/contrib/learn/py
Instructions for updating:
Please use alternatives such as official/mnist/dataset.py from tensorflow/models.
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_core/contrib/learn/py
Instructions for updating:
Please write your own downloading logic.
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_core/contrib/learn/py
Instructions for updating:
Please use urllib or similar directly.
Successfully downloaded train-images-idx3-ubyte.gz 9912422 bytes.
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_core/contrib/learn/py
Instructions for updating:
Please use tf.data to implement this functionality.
Extracting MNIST-data/train-images-idx3-ubyte.gz
Successfully downloaded train-labels-idx1-ubyte.gz 28881 bytes.
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_core/contrib/learn/py
Instructions for updating:
Please use tf.data to implement this functionality.
Extracting MNIST-data/train-labels-idx1-ubyte.gz
Successfully downloaded t10k-images-idx3-ubyte.gz 1648877 bytes.
Extracting MNIST-data/t10k-images-idx3-ubyte.gz
Successfully downloaded t10k-labels-idx1-ubyte.gz 4542 bytes.
Extracting MNIST-data/t10k-labels-idx1-ubyte.gz
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_core/contrib/learn/py
Instructions for updating:
Please use alternatives such as official/mnist/dataset.py from tensorflow/models.
(55000, 784)

```
index = 2
plt.imshow(train_data[index].reshape(28, 28))
print ("y = " + str(np.squeeze(train_labels[index])))
```





```
print ("number of training examples = " + str(train_data.shape[0]))
print ("number of evaluation examples = " + str(eval_data.shape[0]))
print ("X_train shape: " + str(train_data.shape))
print ("Y_train shape: " + str(train_labels.shape))
print ("X_test shape: " + str(eval_data.shape))
print ("Y_test shape: " + str(eval_labels.shape))
```

```
↳ number of training examples = 55000
   number of evaluation examples = 10000
   X_train shape: (55000, 784)
   Y_train shape: (55000,)
   X_test shape: (10000, 784)
   Y_test shape: (10000,)
```

```
def cnn_model_fn(features, labels, mode):
    # Input Layer
    input_height, input_width = 28, 28
    input_channels = 1
    input_layer = tf.reshape(features["x"], [-1, input_height, input_width, input_channels])
    print(input_layer.shape)

    # Convolutional Layer #1 and Pooling Layer #1
    conv1_1 = tf.layers.conv2d(inputs=input_layer, filters=64, kernel_size=[3, 3], padding="same")
    conv1_2 = tf.layers.conv2d(inputs=conv1_1, filters=64, kernel_size=[3, 3], padding="same")
    pool1 = tf.layers.max_pooling2d(inputs=conv1_2, pool_size=[2, 2], strides=2, padding="same")

    # Convolutional Layer #2 and Pooling Layer #2
    conv2_1 = tf.layers.conv2d(inputs=pool1, filters=128, kernel_size=[3, 3], padding="same")
    conv2_2 = tf.layers.conv2d(inputs=conv2_1, filters=128, kernel_size=[3, 3], padding="same")
    pool2 = tf.layers.max_pooling2d(inputs=conv2_2, pool_size=[2, 2], strides=2, padding="same")

    # Convolutional Layer #3 and Pooling Layer #3
    conv3_1 = tf.layers.conv2d(inputs=pool2, filters=256, kernel_size=[3, 3], padding="same")
    conv3_2 = tf.layers.conv2d(inputs=conv3_1, filters=256, kernel_size=[3, 3], padding="same")
    pool3 = tf.layers.max_pooling2d(inputs=conv3_2, pool_size=[2, 2], strides=2, padding="same")

    # Convolutional Layer #4 and Pooling Layer #4
    conv4_1 = tf.layers.conv2d(inputs=pool3, filters=512, kernel_size=[3, 3], padding="same")
    conv4_2 = tf.layers.conv2d(inputs=conv4_1, filters=512, kernel_size=[3, 3], padding="same")
    pool4 = tf.layers.max_pooling2d(inputs=conv4_2, pool_size=[2, 2], strides=2, padding="same")
```

[illegible]

```
mnist_classifier = tf.estimator.Estimator(model_fn=cnn_model_fn,  
                                          model_dir="mnist_vgg13_model")
```

```
☞ INFO:tensorflow:Using default config.  
INFO:tensorflow:Using config: {'_model_dir': 'mnist_vgg13_model', '_tf_random_seed':  
graph_options {  
  rewrite_options {  
    meta_optimizer_iterations: ONE  
  }  
}  
  , '_keep_checkpoint_max': 5, '_keep_checkpoint_every_n_hours': 10000, '_log_step_cour
```

```
train_input_fn = tf.estimator.inputs.numpy_input_fn(x={"x": train_data},  
                                                    y=train_labels,  
                                                    batch_size=100,  
                                                    num_epochs=100,  
                                                    shuffle=True)
```

```
mnist_classifier.train(input_fn=train_input_fn,  
                      steps=None,  
                      hooks=None)
```

```
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```

```
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_core/python/training/
Instructions for updating:
Use Variable.read_value. Variables in 2.X are initialized automatically both in eager
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_estimator/python/esti
Instructions for updating:
To construct input pipelines, use the `tf.data` module.
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_estimator/python/esti
Instructions for updating:
To construct input pipelines, use the `tf.data` module.
INFO:tensorflow:Calling model_fn.
(?, 28, 28, 1)
WARNING:tensorflow:From <ipython-input-6-70e13c25c6f9>:8: conv2d (from tensorflow.pyt
Instructions for updating:
Use `tf.keras.layers.Conv2D` instead.
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_core/python/layers/cc
Instructions for updating:
Please use `layer.__call__` method instead.
WARNING:tensorflow:From <ipython-input-6-70e13c25c6f9>:10: max_pooling2d (from tensor
Instructions for updating:
Use keras.layers.MaxPooling2D instead.
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_core/contrib/layers/p
Instructions for updating:
Use keras.layers.flatten instead.
WARNING:tensorflow:From <ipython-input-6-70e13c25c6f9>:34: dense (from tensorflow.pyt
Instructions for updating:
Use keras.layers.Dense instead.
WARNING:tensorflow:From <ipython-input-6-70e13c25c6f9>:41: dropout (from tensorflow.p
Instructions for updating:
Use keras.layers.dropout instead.
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_core/python/ops/losse
Instructions for updating:
Use tf.where in 2.0, which has the same broadcast rule as np.where
INFO:tensorflow:Done calling model_fn.
INFO:tensorflow:Create CheckpointSaverHook.
INFO:tensorflow:Graph was finalized.
INFO:tensorflow:Running local_init_op.
INFO:tensorflow:Done running local_init_op.
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_core/python/training/
Instructions for updating:
To construct input pipelines, use the `tf.data` module.
INFO:tensorflow:Saving checkpoints for 0 into mnist_vgg13_model/model.ckpt.
INFO:tensorflow:loss = 2.3025963, step = 0
INFO:tensorflow:global_step/sec: 18.3847
INFO:tensorflow:loss = 2.302483, step = 100 (5.442 sec)
INFO:tensorflow:global_step/sec: 18.7779
INFO:tensorflow:loss = 2.3023207, step = 200 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7872
INFO:tensorflow:loss = 2.3030863, step = 300 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.783
INFO:tensorflow:loss = 2.3011518, step = 400 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.784
INFO:tensorflow:loss = 2.3013697, step = 500 (5.319 sec)
INFO:tensorflow:global_step/sec: 18.7507
INFO:tensorflow:loss = 2.3000731, step = 600 (5.334 sec)
INFO:tensorflow:global_step/sec: 18.7892
INFO:tensorflow:loss = 2.301513, step = 700 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7811
INFO:tensorflow:loss = 2.3011496, step = 800 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7816
INFO:tensorflow:loss = 2.3013303, step = 900 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7594
```

INFO:tensorflow:loss = 2.3032396, step = 1000 (5.336 sec)
INFO:tensorflow:global_step/sec: 18.7448
INFO:tensorflow:loss = 2.3039136, step = 1100 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7566
INFO:tensorflow:loss = 2.3017063, step = 1200 (5.331 sec)
INFO:tensorflow:global_step/sec: 18.8064
INFO:tensorflow:loss = 2.3011956, step = 1300 (5.317 sec)
INFO:tensorflow:global_step/sec: 18.789
INFO:tensorflow:loss = 2.3029299, step = 1400 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.777
INFO:tensorflow:loss = 2.3012877, step = 1500 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7875
INFO:tensorflow:loss = 2.3006458, step = 1600 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7702
INFO:tensorflow:loss = 2.30014, step = 1700 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.7573
INFO:tensorflow:loss = 2.3002105, step = 1800 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.8034
INFO:tensorflow:loss = 2.3018298, step = 1900 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7752
INFO:tensorflow:loss = 2.3024943, step = 2000 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7368
INFO:tensorflow:loss = 2.3009946, step = 2100 (5.335 sec)
INFO:tensorflow:global_step/sec: 18.78
INFO:tensorflow:loss = 2.2979083, step = 2200 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7796
INFO:tensorflow:loss = 2.306856, step = 2300 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7775
INFO:tensorflow:loss = 2.306007, step = 2400 (5.324 sec)
INFO:tensorflow:global_step/sec: 18.8021
INFO:tensorflow:loss = 2.3012018, step = 2500 (5.319 sec)
INFO:tensorflow:global_step/sec: 18.807
INFO:tensorflow:loss = 2.2991376, step = 2600 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7725
INFO:tensorflow:loss = 2.2999706, step = 2700 (5.324 sec)
INFO:tensorflow:global_step/sec: 18.7888
INFO:tensorflow:loss = 2.301962, step = 2800 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7915
INFO:tensorflow:loss = 2.3003676, step = 2900 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7886
INFO:tensorflow:loss = 2.2988644, step = 3000 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7815
INFO:tensorflow:loss = 2.3002312, step = 3100 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7559
INFO:tensorflow:loss = 2.2965767, step = 3200 (5.333 sec)
INFO:tensorflow:global_step/sec: 18.763
INFO:tensorflow:loss = 2.2988665, step = 3300 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7492
INFO:tensorflow:loss = 2.299736, step = 3400 (5.334 sec)
INFO:tensorflow:global_step/sec: 18.7855
INFO:tensorflow:loss = 2.2983062, step = 3500 (5.324 sec)
INFO:tensorflow:global_step/sec: 18.7659
INFO:tensorflow:loss = 2.3003507, step = 3600 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7351
INFO:tensorflow:loss = 2.3001845, step = 3700 (5.341 sec)
INFO:tensorflow:global_step/sec: 18.7325
INFO:tensorflow:loss = 2.3003824, step = 3800 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.7967
INFO:tensorflow:loss = 2.299791, step = 3900 (5.319 sec)
INFO:tensorflow:global_step/sec: 18.7811
INFO:tensorflow:loss = 2.2958765, step = 4000 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7815

INFO:tensorflow:loss = 2.298586, step = 4100 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7887
INFO:tensorflow:loss = 2.302392, step = 4200 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7615
INFO:tensorflow:loss = 2.3045607, step = 4300 (5.332 sec)
INFO:tensorflow:global_step/sec: 18.777
INFO:tensorflow:loss = 2.2989504, step = 4400 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7898
INFO:tensorflow:loss = 2.3039215, step = 4500 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7715
INFO:tensorflow:loss = 2.2999535, step = 4600 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.8004
INFO:tensorflow:loss = 2.2986507, step = 4700 (5.319 sec)
INFO:tensorflow:global_step/sec: 18.8101
INFO:tensorflow:loss = 2.3086889, step = 4800 (5.316 sec)
INFO:tensorflow:global_step/sec: 18.8056
INFO:tensorflow:loss = 2.3020098, step = 4900 (5.319 sec)
INFO:tensorflow:global_step/sec: 18.7805
INFO:tensorflow:loss = 2.3006742, step = 5000 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.747
INFO:tensorflow:loss = 2.2939754, step = 5100 (5.334 sec)
INFO:tensorflow:global_step/sec: 18.6988
INFO:tensorflow:loss = 2.2989216, step = 5200 (5.348 sec)
INFO:tensorflow:global_step/sec: 18.7491
INFO:tensorflow:loss = 2.3044727, step = 5300 (5.333 sec)
INFO:tensorflow:global_step/sec: 18.8111
INFO:tensorflow:loss = 2.3084843, step = 5400 (5.314 sec)
INFO:tensorflow:global_step/sec: 18.7626
INFO:tensorflow:loss = 2.3011804, step = 5500 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.8123
INFO:tensorflow:loss = 2.2978382, step = 5600 (5.318 sec)
INFO:tensorflow:global_step/sec: 18.7846
INFO:tensorflow:loss = 2.303204, step = 5700 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7652
INFO:tensorflow:loss = 2.3021216, step = 5800 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.8065
INFO:tensorflow:loss = 2.3031757, step = 5900 (5.318 sec)
INFO:tensorflow:global_step/sec: 18.8025
INFO:tensorflow:loss = 2.295405, step = 6000 (5.316 sec)
INFO:tensorflow:global_step/sec: 18.7906
INFO:tensorflow:loss = 2.2966015, step = 6100 (5.324 sec)
INFO:tensorflow:global_step/sec: 18.7945
INFO:tensorflow:loss = 2.2984362, step = 6200 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7881
INFO:tensorflow:loss = 2.304799, step = 6300 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7576
INFO:tensorflow:loss = 2.30295, step = 6400 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.8045
INFO:tensorflow:loss = 2.2936041, step = 6500 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7513
INFO:tensorflow:loss = 2.2900195, step = 6600 (5.331 sec)
INFO:tensorflow:global_step/sec: 18.7983
INFO:tensorflow:loss = 2.299063, step = 6700 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7524
INFO:tensorflow:loss = 2.3086674, step = 6800 (5.331 sec)
INFO:tensorflow:global_step/sec: 18.7389
INFO:tensorflow:loss = 2.310513, step = 6900 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.7735
INFO:tensorflow:loss = 2.2987843, step = 7000 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.8256
INFO:tensorflow:loss = 2.2941456, step = 7100 (5.314 sec)

INFO:tensorflow:global_step/sec: 18.7753
INFO:tensorflow:loss = 2.3040054, step = 7200 (5.324 sec)
INFO:tensorflow:global_step/sec: 18.7538
INFO:tensorflow:loss = 2.2996252, step = 7300 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.7145
INFO:tensorflow:loss = 2.2965288, step = 7400 (5.338 sec)
INFO:tensorflow:global_step/sec: 18.7677
INFO:tensorflow:loss = 2.2949326, step = 7500 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.8046
INFO:tensorflow:loss = 2.2989037, step = 7600 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7967
INFO:tensorflow:loss = 2.3009183, step = 7700 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7694
INFO:tensorflow:loss = 2.3024988, step = 7800 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7676
INFO:tensorflow:loss = 2.2984164, step = 7900 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.8043
INFO:tensorflow:loss = 2.3050315, step = 8000 (5.318 sec)
INFO:tensorflow:global_step/sec: 18.779
INFO:tensorflow:loss = 2.2989507, step = 8100 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7773
INFO:tensorflow:loss = 2.301057, step = 8200 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7812
INFO:tensorflow:loss = 2.3096058, step = 8300 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7951
INFO:tensorflow:loss = 2.295106, step = 8400 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7452
INFO:tensorflow:loss = 2.2937994, step = 8500 (5.335 sec)
INFO:tensorflow:global_step/sec: 18.7802
INFO:tensorflow:loss = 2.3012252, step = 8600 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7522
INFO:tensorflow:loss = 2.300427, step = 8700 (5.334 sec)
INFO:tensorflow:global_step/sec: 18.6617
INFO:tensorflow:loss = 2.301157, step = 8800 (5.358 sec)
INFO:tensorflow:global_step/sec: 18.6829
INFO:tensorflow:loss = 2.3059626, step = 8900 (5.353 sec)
INFO:tensorflow:global_step/sec: 18.7914
INFO:tensorflow:loss = 2.3042517, step = 9000 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.701
INFO:tensorflow:loss = 2.3012552, step = 9100 (5.345 sec)
INFO:tensorflow:global_step/sec: 18.7224
INFO:tensorflow:loss = 2.3023744, step = 9200 (5.344 sec)
INFO:tensorflow:global_step/sec: 18.6308
INFO:tensorflow:loss = 2.2987392, step = 9300 (5.367 sec)
INFO:tensorflow:global_step/sec: 18.6913
INFO:tensorflow:loss = 2.2980492, step = 9400 (5.349 sec)
INFO:tensorflow:global_step/sec: 18.7201
INFO:tensorflow:loss = 2.3001595, step = 9500 (5.344 sec)
INFO:tensorflow:global_step/sec: 18.7306
INFO:tensorflow:loss = 2.307239, step = 9600 (5.338 sec)
INFO:tensorflow:global_step/sec: 18.6422
INFO:tensorflow:loss = 2.3006701, step = 9700 (5.365 sec)
INFO:tensorflow:global_step/sec: 18.7097
INFO:tensorflow:loss = 2.3046637, step = 9800 (5.341 sec)
INFO:tensorflow:global_step/sec: 18.8091
INFO:tensorflow:loss = 2.2994285, step = 9900 (5.319 sec)
INFO:tensorflow:global_step/sec: 18.751
INFO:tensorflow:loss = 2.2999485, step = 10000 (5.333 sec)
INFO:tensorflow:global_step/sec: 18.7361
INFO:tensorflow:loss = 2.3001852, step = 10100 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.7824
INFO:tensorflow:loss = 2.30128, step = 10200 (5.324 sec)

```
INFO:tensorflow:global_step/sec: 18.7632
INFO:tensorflow:loss = 2.2996924, step = 10300 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.7701
INFO:tensorflow:loss = 2.2897427, step = 10400 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.7795
INFO:tensorflow:loss = 2.294825, step = 10500 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7689
INFO:tensorflow:loss = 2.2948086, step = 10600 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.8006
INFO:tensorflow:loss = 2.299905, step = 10700 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7843
INFO:tensorflow:loss = 2.305275, step = 10800 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7312
INFO:tensorflow:loss = 2.3044043, step = 10900 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.6638
INFO:tensorflow:loss = 2.299424, step = 11000 (5.361 sec)
INFO:tensorflow:global_step/sec: 18.7069
INFO:tensorflow:loss = 2.2975793, step = 11100 (5.344 sec)
INFO:tensorflow:Saving checkpoints for 11126 into mnist_vgg13_model/model.ckpt.
INFO:tensorflow:global_step/sec: 17.975
INFO:tensorflow:loss = 2.3074796, step = 11200 (5.563 sec)
INFO:tensorflow:global_step/sec: 18.7356
INFO:tensorflow:loss = 2.2993147, step = 11300 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.7296
INFO:tensorflow:loss = 2.2968628, step = 11400 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.721
INFO:tensorflow:loss = 2.2994866, step = 11500 (5.341 sec)
INFO:tensorflow:global_step/sec: 18.731
INFO:tensorflow:loss = 2.2943652, step = 11600 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.7646
INFO:tensorflow:loss = 2.291255, step = 11700 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7779
INFO:tensorflow:loss = 2.2954602, step = 11800 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.6898
INFO:tensorflow:loss = 2.2876768, step = 11900 (5.361 sec)
INFO:tensorflow:global_step/sec: 18.7057
INFO:tensorflow:loss = 2.306938, step = 12000 (5.335 sec)
INFO:tensorflow:global_step/sec: 18.7191
INFO:tensorflow:loss = 2.2923946, step = 12100 (5.342 sec)
INFO:tensorflow:global_step/sec: 18.7744
INFO:tensorflow:loss = 2.2846441, step = 12200 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7723
INFO:tensorflow:loss = 2.297845, step = 12300 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7561
INFO:tensorflow:loss = 2.2945266, step = 12400 (5.335 sec)
INFO:tensorflow:global_step/sec: 18.7046
INFO:tensorflow:loss = 2.294726, step = 12500 (5.345 sec)
INFO:tensorflow:global_step/sec: 18.7216
INFO:tensorflow:loss = 2.2923265, step = 12600 (5.342 sec)
INFO:tensorflow:global_step/sec: 18.7368
INFO:tensorflow:loss = 2.2939801, step = 12700 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.7341
INFO:tensorflow:loss = 2.2941728, step = 12800 (5.335 sec)
INFO:tensorflow:global_step/sec: 18.7559
INFO:tensorflow:loss = 2.3054008, step = 12900 (5.334 sec)
INFO:tensorflow:global_step/sec: 18.7594
INFO:tensorflow:loss = 2.2958443, step = 13000 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7658
INFO:tensorflow:loss = 2.3031907, step = 13100 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7716
INFO:tensorflow:loss = 2.2977867, step = 13200 (5.327 sec)
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INFO:tensorflow:global_step/sec: 18.7575
INFO:tensorflow:loss = 2.2991548, step = 13300 (5.333 sec)
INFO:tensorflow:global_step/sec: 18.7495
INFO:tensorflow:loss = 2.2961926, step = 13400 (5.332 sec)
INFO:tensorflow:global_step/sec: 18.7363
INFO:tensorflow:loss = 2.299999, step = 13500 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.667
INFO:tensorflow:loss = 2.2925441, step = 13600 (5.356 sec)
INFO:tensorflow:global_step/sec: 18.7531
INFO:tensorflow:loss = 2.3036473, step = 13700 (5.331 sec)
INFO:tensorflow:global_step/sec: 18.6935
INFO:tensorflow:loss = 2.2955258, step = 13800 (5.352 sec)
INFO:tensorflow:global_step/sec: 18.7312
INFO:tensorflow:loss = 2.3020878, step = 13900 (5.336 sec)
INFO:tensorflow:global_step/sec: 18.7012
INFO:tensorflow:loss = 2.311387, step = 14000 (5.350 sec)
INFO:tensorflow:global_step/sec: 18.7235
INFO:tensorflow:loss = 2.29309, step = 14100 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.6813
INFO:tensorflow:loss = 2.2964075, step = 14200 (5.353 sec)
INFO:tensorflow:global_step/sec: 18.6647
INFO:tensorflow:loss = 2.2966034, step = 14300 (5.356 sec)
INFO:tensorflow:global_step/sec: 18.5286
INFO:tensorflow:loss = 2.2997608, step = 14400 (5.399 sec)
INFO:tensorflow:global_step/sec: 18.5649
INFO:tensorflow:loss = 2.2971709, step = 14500 (5.396 sec)
INFO:tensorflow:global_step/sec: 18.619
INFO:tensorflow:loss = 2.2992735, step = 14600 (5.360 sec)
INFO:tensorflow:global_step/sec: 18.6862
INFO:tensorflow:loss = 2.2903287, step = 14700 (5.354 sec)
INFO:tensorflow:global_step/sec: 18.6301
INFO:tensorflow:loss = 2.291296, step = 14800 (5.367 sec)
INFO:tensorflow:global_step/sec: 18.6527
INFO:tensorflow:loss = 2.2937908, step = 14900 (5.359 sec)
INFO:tensorflow:global_step/sec: 18.6823
INFO:tensorflow:loss = 2.2973726, step = 15000 (5.352 sec)
INFO:tensorflow:global_step/sec: 18.6714
INFO:tensorflow:loss = 2.2993212, step = 15100 (5.359 sec)
INFO:tensorflow:global_step/sec: 18.6441
INFO:tensorflow:loss = 2.2995336, step = 15200 (5.363 sec)
INFO:tensorflow:global_step/sec: 18.6866
INFO:tensorflow:loss = 2.3009665, step = 15300 (5.349 sec)
INFO:tensorflow:global_step/sec: 18.6902
INFO:tensorflow:loss = 2.300599, step = 15400 (5.353 sec)
INFO:tensorflow:global_step/sec: 18.6886
INFO:tensorflow:loss = 2.298777, step = 15500 (5.350 sec)
INFO:tensorflow:global_step/sec: 18.7314
INFO:tensorflow:loss = 2.2970324, step = 15600 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.7231
INFO:tensorflow:loss = 2.300561, step = 15700 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.7143
INFO:tensorflow:loss = 2.2978077, step = 15800 (5.345 sec)
INFO:tensorflow:global_step/sec: 18.7323
INFO:tensorflow:loss = 2.298569, step = 15900 (5.338 sec)
INFO:tensorflow:global_step/sec: 18.7353
INFO:tensorflow:loss = 2.2949526, step = 16000 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.741
INFO:tensorflow:loss = 2.298781, step = 16100 (5.335 sec)
INFO:tensorflow:global_step/sec: 18.7145
INFO:tensorflow:loss = 2.2903337, step = 16200 (5.342 sec)
INFO:tensorflow:global_step/sec: 18.7504
INFO:tensorflow:loss = 2.3095543, step = 16300 (5.335 sec)

INFO:tensorflow:global_step/sec: 18.7399
INFO:tensorflow:loss = 2.2981315, step = 16400 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.7658
INFO:tensorflow:loss = 2.2949817, step = 16500 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7184
INFO:tensorflow:loss = 2.3034976, step = 16600 (5.343 sec)
INFO:tensorflow:global_step/sec: 18.711
INFO:tensorflow:loss = 2.293066, step = 16700 (5.344 sec)
INFO:tensorflow:global_step/sec: 18.6425
INFO:tensorflow:loss = 2.2989292, step = 16800 (5.365 sec)
INFO:tensorflow:global_step/sec: 18.6898
INFO:tensorflow:loss = 2.2992544, step = 16900 (5.350 sec)
INFO:tensorflow:global_step/sec: 18.7239
INFO:tensorflow:loss = 2.299471, step = 17000 (5.340 sec)
INFO:tensorflow:global_step/sec: 18.7457
INFO:tensorflow:loss = 2.296653, step = 17100 (5.336 sec)
INFO:tensorflow:global_step/sec: 18.6969
INFO:tensorflow:loss = 2.2957776, step = 17200 (5.347 sec)
INFO:tensorflow:global_step/sec: 18.7466
INFO:tensorflow:loss = 2.2932749, step = 17300 (5.335 sec)
INFO:tensorflow:global_step/sec: 18.7381
INFO:tensorflow:loss = 2.2962878, step = 17400 (5.336 sec)
INFO:tensorflow:global_step/sec: 18.752
INFO:tensorflow:loss = 2.2905428, step = 17500 (5.331 sec)
INFO:tensorflow:global_step/sec: 18.718
INFO:tensorflow:loss = 2.2964938, step = 17600 (5.343 sec)
INFO:tensorflow:global_step/sec: 18.7105
INFO:tensorflow:loss = 2.29572, step = 17700 (5.345 sec)
INFO:tensorflow:global_step/sec: 18.74
INFO:tensorflow:loss = 2.3039157, step = 17800 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.7455
INFO:tensorflow:loss = 2.3038852, step = 17900 (5.331 sec)
INFO:tensorflow:global_step/sec: 18.7006
INFO:tensorflow:loss = 2.2973242, step = 18000 (5.351 sec)
INFO:tensorflow:global_step/sec: 18.7394
INFO:tensorflow:loss = 2.285949, step = 18100 (5.333 sec)
INFO:tensorflow:global_step/sec: 18.7252
INFO:tensorflow:loss = 2.2871883, step = 18200 (5.340 sec)
INFO:tensorflow:global_step/sec: 18.7666
INFO:tensorflow:loss = 2.2887418, step = 18300 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7416
INFO:tensorflow:loss = 2.2911873, step = 18400 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.753
INFO:tensorflow:loss = 2.3006814, step = 18500 (5.333 sec)
INFO:tensorflow:global_step/sec: 18.7241
INFO:tensorflow:loss = 2.2875595, step = 18600 (5.338 sec)
INFO:tensorflow:global_step/sec: 18.7308
INFO:tensorflow:loss = 2.2879398, step = 18700 (5.338 sec)
INFO:tensorflow:global_step/sec: 18.7314
INFO:tensorflow:loss = 2.2966435, step = 18800 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.7536
INFO:tensorflow:loss = 2.2987347, step = 18900 (5.334 sec)
INFO:tensorflow:global_step/sec: 18.7414
INFO:tensorflow:loss = 2.2959373, step = 19000 (5.336 sec)
INFO:tensorflow:global_step/sec: 18.7087
INFO:tensorflow:loss = 2.2916255, step = 19100 (5.346 sec)
INFO:tensorflow:global_step/sec: 18.741
INFO:tensorflow:loss = 2.2936473, step = 19200 (5.336 sec)
INFO:tensorflow:global_step/sec: 18.767
INFO:tensorflow:loss = 2.2881935, step = 19300 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7044

INFO:tensorflow:loss = 2.2767692, step = 19400 (5.342 sec)
INFO:tensorflow:global_step/sec: 18.7428
INFO:tensorflow:loss = 2.2893913, step = 19500 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.7727
INFO:tensorflow:loss = 2.2970932, step = 19600 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7315
INFO:tensorflow:loss = 2.3022232, step = 19700 (5.340 sec)
INFO:tensorflow:global_step/sec: 18.7328
INFO:tensorflow:loss = 2.3043077, step = 19800 (5.336 sec)
INFO:tensorflow:global_step/sec: 18.7352
INFO:tensorflow:loss = 2.290466, step = 19900 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.7913
INFO:tensorflow:loss = 2.2997897, step = 20000 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7893
INFO:tensorflow:loss = 2.2896786, step = 20100 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7758
INFO:tensorflow:loss = 2.2860544, step = 20200 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7762
INFO:tensorflow:loss = 2.2911482, step = 20300 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7848
INFO:tensorflow:loss = 2.2953744, step = 20400 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7662
INFO:tensorflow:loss = 2.2943335, step = 20500 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7925
INFO:tensorflow:loss = 2.2795289, step = 20600 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.8025
INFO:tensorflow:loss = 2.2833195, step = 20700 (5.317 sec)
INFO:tensorflow:global_step/sec: 18.7995
INFO:tensorflow:loss = 2.2879648, step = 20800 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.809
INFO:tensorflow:loss = 2.2846215, step = 20900 (5.317 sec)
INFO:tensorflow:global_step/sec: 18.7811
INFO:tensorflow:loss = 2.2884338, step = 21000 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7699
INFO:tensorflow:loss = 2.2953749, step = 21100 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7914
INFO:tensorflow:loss = 2.2933536, step = 21200 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.8023
INFO:tensorflow:loss = 2.2867327, step = 21300 (5.319 sec)
INFO:tensorflow:global_step/sec: 18.7894
INFO:tensorflow:loss = 2.290628, step = 21400 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.8246
INFO:tensorflow:loss = 2.298821, step = 21500 (5.316 sec)
INFO:tensorflow:global_step/sec: 18.7571
INFO:tensorflow:loss = 2.2773178, step = 21600 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7653
INFO:tensorflow:loss = 2.2857292, step = 21700 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.7774
INFO:tensorflow:loss = 2.2856355, step = 21800 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7786
INFO:tensorflow:loss = 2.2828994, step = 21900 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7652
INFO:tensorflow:loss = 2.2839391, step = 22000 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7736
INFO:tensorflow:loss = 2.2950633, step = 22100 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.7736
INFO:tensorflow:loss = 2.281907, step = 22200 (5.324 sec)
INFO:tensorflow:global_step/sec: 18.7903
INFO:tensorflow:loss = 2.2875075, step = 22300 (5.323 sec)
INFO:tensorflow:Saving checkpoints for 22363 into mnist_vgg13_model/model.ckpt.
INFO:tensorflow:global_step/sec: 17.9765
INFO:tensorflow:loss = 2.283446, step = 22400 (5.564 sec)

INFO:tensorflow:global_step/sec: 18.7082
INFO:tensorflow:loss = 2.2843657, step = 22500 (5.344 sec)
INFO:tensorflow:global_step/sec: 18.6691
INFO:tensorflow:loss = 2.2813127, step = 22600 (5.357 sec)
INFO:tensorflow:global_step/sec: 18.6996
INFO:tensorflow:loss = 2.282517, step = 22700 (5.346 sec)
INFO:tensorflow:global_step/sec: 18.7617
INFO:tensorflow:loss = 2.2833197, step = 22800 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7914
INFO:tensorflow:loss = 2.2882164, step = 22900 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7607
INFO:tensorflow:loss = 2.2803886, step = 23000 (5.332 sec)
INFO:tensorflow:global_step/sec: 18.7946
INFO:tensorflow:loss = 2.2732878, step = 23100 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7743
INFO:tensorflow:loss = 2.279702, step = 23200 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7561
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INFO:tensorflow:global_step/sec: 18.7655
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INFO:tensorflow:global_step/sec: 18.7984
INFO:tensorflow:loss = 2.273306, step = 23600 (5.321 sec)
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INFO:tensorflow:global_step/sec: 18.7479
INFO:tensorflow:loss = 2.2709353, step = 23800 (5.332 sec)
INFO:tensorflow:global_step/sec: 18.7932
INFO:tensorflow:loss = 2.267044, step = 23900 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7766
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INFO:tensorflow:global_step/sec: 18.7718
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INFO:tensorflow:global_step/sec: 18.7391
INFO:tensorflow:loss = 2.2582994, step = 24200 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.751
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INFO:tensorflow:global_step/sec: 18.7796
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INFO:tensorflow:global_step/sec: 18.7751
INFO:tensorflow:loss = 2.2600586, step = 24500 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7615
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INFO:tensorflow:global_step/sec: 18.7607
INFO:tensorflow:loss = 2.2486944, step = 24700 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.733
INFO:tensorflow:loss = 2.248204, step = 24800 (5.340 sec)
INFO:tensorflow:global_step/sec: 18.7987
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INFO:tensorflow:global_step/sec: 18.8026
INFO:tensorflow:loss = 2.2427123, step = 25000 (5.318 sec)
INFO:tensorflow:global_step/sec: 18.7743
INFO:tensorflow:loss = 2.2537653, step = 25100 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7974
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INFO:tensorflow:global_step/sec: 18.775
INFO:tensorflow:loss = 2.2231653, step = 25300 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.794
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INFO:tensorflow:global_step/sec: 18.7926

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INFO:tensorflow:global_step/sec: 18.7123
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INFO:tensorflow:global_step/sec: 18.7713
INFO:tensorflow:loss = 2.2134354, step = 25800 (5.331 sec)
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INFO:tensorflow:loss = 2.1889565, step = 25900 (5.331 sec)
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INFO:tensorflow:loss = 2.1242697, step = 26100 (5.319 sec)
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INFO:tensorflow:loss = 2.0162067, step = 26300 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.7576
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INFO:tensorflow:loss = 1.687671, step = 26500 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7982
INFO:tensorflow:loss = 1.4088408, step = 26600 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.752
INFO:tensorflow:loss = 1.2798619, step = 26700 (5.332 sec)
INFO:tensorflow:global_step/sec: 18.7588
INFO:tensorflow:loss = 1.2437433, step = 26800 (5.334 sec)
INFO:tensorflow:global_step/sec: 18.791
INFO:tensorflow:loss = 1.0912569, step = 26900 (5.318 sec)
INFO:tensorflow:global_step/sec: 18.7759
INFO:tensorflow:loss = 1.1046906, step = 27000 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.776
INFO:tensorflow:loss = 1.0122232, step = 27100 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7211
INFO:tensorflow:loss = 0.9040797, step = 27200 (5.338 sec)
INFO:tensorflow:global_step/sec: 18.7558
INFO:tensorflow:loss = 0.79775727, step = 27300 (5.333 sec)
INFO:tensorflow:global_step/sec: 18.7899
INFO:tensorflow:loss = 0.66948473, step = 27400 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7666
INFO:tensorflow:loss = 0.7273909, step = 27500 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.7909
INFO:tensorflow:loss = 0.8280553, step = 27600 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7853
INFO:tensorflow:loss = 0.7401321, step = 27700 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.795
INFO:tensorflow:loss = 0.5297534, step = 27800 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.739
INFO:tensorflow:loss = 0.74549186, step = 27900 (5.334 sec)
INFO:tensorflow:global_step/sec: 18.7806
INFO:tensorflow:loss = 0.6280467, step = 28000 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7591
INFO:tensorflow:loss = 0.41050404, step = 28100 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7566
INFO:tensorflow:loss = 0.42989263, step = 28200 (5.333 sec)
INFO:tensorflow:global_step/sec: 18.7747
INFO:tensorflow:loss = 0.55125326, step = 28300 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.719
INFO:tensorflow:loss = 0.55221754, step = 28400 (5.340 sec)
INFO:tensorflow:global_step/sec: 18.6985
INFO:tensorflow:loss = 0.5371835, step = 28500 (5.350 sec)
INFO:tensorflow:global_step/sec: 18.7486

INFO:tensorflow:loss = 0.5713867, step = 28600 (5.332 sec)
INFO:tensorflow:global_step/sec: 18.8067
INFO:tensorflow:loss = 0.4863254, step = 28700 (5.317 sec)
INFO:tensorflow:global_step/sec: 18.8216
INFO:tensorflow:loss = 0.37054044, step = 28800 (5.314 sec)
INFO:tensorflow:global_step/sec: 18.8106
INFO:tensorflow:loss = 0.45341623, step = 28900 (5.315 sec)
INFO:tensorflow:global_step/sec: 18.7913
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INFO:tensorflow:global_step/sec: 18.8069
INFO:tensorflow:loss = 0.4544442, step = 29100 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7609
INFO:tensorflow:loss = 0.4815622, step = 29200 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.785
INFO:tensorflow:loss = 0.44144073, step = 29300 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7878
INFO:tensorflow:loss = 0.3904856, step = 29400 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7671
INFO:tensorflow:loss = 0.4222648, step = 29500 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7721
INFO:tensorflow:loss = 0.29766047, step = 29600 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7843
INFO:tensorflow:loss = 0.29535985, step = 29700 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7861
INFO:tensorflow:loss = 0.34444913, step = 29800 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7945
INFO:tensorflow:loss = 0.39890996, step = 29900 (5.319 sec)
INFO:tensorflow:global_step/sec: 18.7885
INFO:tensorflow:loss = 0.2693435, step = 30000 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7438
INFO:tensorflow:loss = 0.2698363, step = 30100 (5.335 sec)
INFO:tensorflow:global_step/sec: 18.7689
INFO:tensorflow:loss = 0.4144842, step = 30200 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.8002
INFO:tensorflow:loss = 0.4295251, step = 30300 (5.319 sec)
INFO:tensorflow:global_step/sec: 18.8008
INFO:tensorflow:loss = 0.38728032, step = 30400 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7932
INFO:tensorflow:loss = 0.14191405, step = 30500 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7864
INFO:tensorflow:loss = 0.31736618, step = 30600 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7595
INFO:tensorflow:loss = 0.2609974, step = 30700 (5.333 sec)
INFO:tensorflow:global_step/sec: 18.7656
INFO:tensorflow:loss = 0.27073184, step = 30800 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7771
INFO:tensorflow:loss = 0.24020487, step = 30900 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.8031
INFO:tensorflow:loss = 0.18942712, step = 31000 (5.317 sec)
INFO:tensorflow:global_step/sec: 18.7813
INFO:tensorflow:loss = 0.22501045, step = 31100 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7722
INFO:tensorflow:loss = 0.30666444, step = 31200 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.7969
INFO:tensorflow:loss = 0.24598226, step = 31300 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7722
INFO:tensorflow:loss = 0.29758993, step = 31400 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.776
INFO:tensorflow:loss = 0.29602, step = 31500 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7324
INFO:tensorflow:loss = 0.120701045, step = 31600 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.7885


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INFO:tensorflow:global_step/sec: 18.7886
INFO:tensorflow:loss = 0.1848569, step = 31700 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7832
INFO:tensorflow:loss = 0.24745405, step = 31800 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7895
INFO:tensorflow:loss = 0.19294032, step = 31900 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7976
INFO:tensorflow:loss = 0.25544384, step = 32000 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7797
INFO:tensorflow:loss = 0.21977068, step = 32100 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7786
INFO:tensorflow:loss = 0.2171095, step = 32200 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7637
INFO:tensorflow:loss = 0.23111695, step = 32300 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7983
INFO:tensorflow:loss = 0.22526018, step = 32400 (5.318 sec)
INFO:tensorflow:global_step/sec: 18.7699
INFO:tensorflow:loss = 0.28303033, step = 32500 (5.332 sec)
INFO:tensorflow:global_step/sec: 18.7578
INFO:tensorflow:loss = 0.1673349, step = 32600 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.7643
INFO:tensorflow:loss = 0.16259363, step = 32700 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7509
INFO:tensorflow:loss = 0.23431478, step = 32800 (5.336 sec)
INFO:tensorflow:global_step/sec: 18.7312
INFO:tensorflow:loss = 0.1778864, step = 32900 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.7513
INFO:tensorflow:loss = 0.15082215, step = 33000 (5.333 sec)
INFO:tensorflow:global_step/sec: 18.7596
INFO:tensorflow:loss = 0.21262856, step = 33100 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7696
INFO:tensorflow:loss = 0.12043231, step = 33200 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7817
INFO:tensorflow:loss = 0.1044302, step = 33300 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7719
INFO:tensorflow:loss = 0.27979705, step = 33400 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7431
INFO:tensorflow:loss = 0.26347932, step = 33500 (5.332 sec)
INFO:tensorflow:global_step/sec: 18.7802
INFO:tensorflow:loss = 0.12611577, step = 33600 (5.328 sec)
INFO:tensorflow:Saving checkpoints for 33621 into mnist_vgg13_model/model.ckpt.
INFO:tensorflow:global_step/sec: 17.9776
INFO:tensorflow:loss = 0.14826034, step = 33700 (5.559 sec)
INFO:tensorflow:global_step/sec: 18.7234
INFO:tensorflow:loss = 0.14354984, step = 33800 (5.341 sec)
INFO:tensorflow:global_step/sec: 18.6929
INFO:tensorflow:loss = 0.22351676, step = 33900 (5.350 sec)
INFO:tensorflow:global_step/sec: 18.7266
INFO:tensorflow:loss = 0.26378953, step = 34000 (5.342 sec)
INFO:tensorflow:global_step/sec: 18.7199
INFO:tensorflow:loss = 0.14511321, step = 34100 (5.343 sec)
INFO:tensorflow:global_step/sec: 18.6857
INFO:tensorflow:loss = 0.13525915, step = 34200 (5.349 sec)
INFO:tensorflow:global_step/sec: 18.6564
INFO:tensorflow:loss = 0.1535918, step = 34300 (5.361 sec)
INFO:tensorflow:global_step/sec: 18.6546
INFO:tensorflow:loss = 0.114462554, step = 34400 (5.359 sec)
INFO:tensorflow:global_step/sec: 18.6362
INFO:tensorflow:loss = 0.15064983, step = 34500 (5.368 sec)
INFO:tensorflow:global_step/sec: 18.6461
INFO:tensorflow:loss = 0.15095654, step = 34600 (5.359 sec)
INFO:tensorflow:global_step/sec: 18.6787
```

INFO:tensorflow:loss = 0.22251667, step = 34700 (5.357 sec)
INFO:tensorflow:global_step/sec: 18.7377
INFO:tensorflow:loss = 0.13161115, step = 34800 (5.338 sec)
INFO:tensorflow:global_step/sec: 18.6483
INFO:tensorflow:loss = 0.14637478, step = 34900 (5.360 sec)
INFO:tensorflow:global_step/sec: 18.6319
INFO:tensorflow:loss = 0.073590666, step = 35000 (5.371 sec)
INFO:tensorflow:global_step/sec: 18.6456
INFO:tensorflow:loss = 0.20908129, step = 35100 (5.358 sec)
INFO:tensorflow:global_step/sec: 18.6348
INFO:tensorflow:loss = 0.107017815, step = 35200 (5.366 sec)
INFO:tensorflow:global_step/sec: 18.6638
INFO:tensorflow:loss = 0.140014, step = 35300 (5.359 sec)
INFO:tensorflow:global_step/sec: 18.6564
INFO:tensorflow:loss = 0.14079311, step = 35400 (5.358 sec)
INFO:tensorflow:global_step/sec: 18.6611
INFO:tensorflow:loss = 0.12152299, step = 35500 (5.362 sec)
INFO:tensorflow:global_step/sec: 18.6871
INFO:tensorflow:loss = 0.20714356, step = 35600 (5.350 sec)
INFO:tensorflow:global_step/sec: 18.6316
INFO:tensorflow:loss = 0.1291259, step = 35700 (5.366 sec)
INFO:tensorflow:global_step/sec: 18.6334
INFO:tensorflow:loss = 0.14207195, step = 35800 (5.367 sec)
INFO:tensorflow:global_step/sec: 18.6571
INFO:tensorflow:loss = 0.07315995, step = 35900 (5.364 sec)
INFO:tensorflow:global_step/sec: 18.6204
INFO:tensorflow:loss = 0.081782624, step = 36000 (5.367 sec)
INFO:tensorflow:global_step/sec: 18.6545
INFO:tensorflow:loss = 0.14651515, step = 36100 (5.361 sec)
INFO:tensorflow:global_step/sec: 18.6696
INFO:tensorflow:loss = 0.09947437, step = 36200 (5.357 sec)
INFO:tensorflow:global_step/sec: 18.6373
INFO:tensorflow:loss = 0.07503487, step = 36300 (5.366 sec)
INFO:tensorflow:global_step/sec: 18.6805
INFO:tensorflow:loss = 0.10685296, step = 36400 (5.352 sec)
INFO:tensorflow:global_step/sec: 18.7062
INFO:tensorflow:loss = 0.18164235, step = 36500 (5.349 sec)
INFO:tensorflow:global_step/sec: 18.6806
INFO:tensorflow:loss = 0.04010507, step = 36600 (5.350 sec)
INFO:tensorflow:global_step/sec: 18.695
INFO:tensorflow:loss = 0.17412773, step = 36700 (5.352 sec)
INFO:tensorflow:global_step/sec: 18.6388
INFO:tensorflow:loss = 0.21459408, step = 36800 (5.363 sec)
INFO:tensorflow:global_step/sec: 18.683
INFO:tensorflow:loss = 0.114685506, step = 36900 (5.353 sec)
INFO:tensorflow:global_step/sec: 18.6911
INFO:tensorflow:loss = 0.07506078, step = 37000 (5.349 sec)
INFO:tensorflow:global_step/sec: 18.6577
INFO:tensorflow:loss = 0.08910902, step = 37100 (5.360 sec)
INFO:tensorflow:global_step/sec: 18.6462
INFO:tensorflow:loss = 0.14688598, step = 37200 (5.361 sec)
INFO:tensorflow:global_step/sec: 18.6976
INFO:tensorflow:loss = 0.22765832, step = 37300 (5.349 sec)
INFO:tensorflow:global_step/sec: 18.6677
INFO:tensorflow:loss = 0.1256118, step = 37400 (5.357 sec)
INFO:tensorflow:global_step/sec: 18.6822
INFO:tensorflow:loss = 0.117497995, step = 37500 (5.357 sec)
INFO:tensorflow:global_step/sec: 18.6301
INFO:tensorflow:loss = 0.13992384, step = 37600 (5.367 sec)
INFO:tensorflow:global_step/sec: 18.6572
INFO:tensorflow:loss = 0.12856573, step = 37700 (5.360 sec)
INFO:tensorflow:global_step/sec: 18.7002

INFO:tensorflow:global_step/sec: 18.7002
INFO:tensorflow:loss = 0.14750788, step = 37800 (5.345 sec)
INFO:tensorflow:global_step/sec: 18.6354
INFO:tensorflow:loss = 0.13575783, step = 37900 (5.368 sec)
INFO:tensorflow:global_step/sec: 18.6947
INFO:tensorflow:loss = 0.079197705, step = 38000 (5.346 sec)
INFO:tensorflow:global_step/sec: 18.6894
INFO:tensorflow:loss = 0.11724959, step = 38100 (5.354 sec)
INFO:tensorflow:global_step/sec: 18.6823
INFO:tensorflow:loss = 0.03879157, step = 38200 (5.349 sec)
INFO:tensorflow:global_step/sec: 18.6752
INFO:tensorflow:loss = 0.11239628, step = 38300 (5.357 sec)
INFO:tensorflow:global_step/sec: 18.6702
INFO:tensorflow:loss = 0.15275328, step = 38400 (5.359 sec)
INFO:tensorflow:global_step/sec: 18.6604
INFO:tensorflow:loss = 0.07648855, step = 38500 (5.354 sec)
INFO:tensorflow:global_step/sec: 18.7071
INFO:tensorflow:loss = 0.05584215, step = 38600 (5.346 sec)
INFO:tensorflow:global_step/sec: 18.6891
INFO:tensorflow:loss = 0.054209262, step = 38700 (5.351 sec)
INFO:tensorflow:global_step/sec: 18.6847
INFO:tensorflow:loss = 0.09591114, step = 38800 (5.354 sec)
INFO:tensorflow:global_step/sec: 18.6673
INFO:tensorflow:loss = 0.07800794, step = 38900 (5.357 sec)
INFO:tensorflow:global_step/sec: 18.634
INFO:tensorflow:loss = 0.09450427, step = 39000 (5.370 sec)
INFO:tensorflow:global_step/sec: 18.6507
INFO:tensorflow:loss = 0.17276157, step = 39100 (5.358 sec)
INFO:tensorflow:global_step/sec: 18.6768
INFO:tensorflow:loss = 0.1190768, step = 39200 (5.354 sec)
INFO:tensorflow:global_step/sec: 18.6793
INFO:tensorflow:loss = 0.14256698, step = 39300 (5.354 sec)
INFO:tensorflow:global_step/sec: 18.7129
INFO:tensorflow:loss = 0.07866729, step = 39400 (5.342 sec)
INFO:tensorflow:global_step/sec: 18.6946
INFO:tensorflow:loss = 0.075476706, step = 39500 (5.352 sec)
INFO:tensorflow:global_step/sec: 18.6741
INFO:tensorflow:loss = 0.053653598, step = 39600 (5.354 sec)
INFO:tensorflow:global_step/sec: 18.6553
INFO:tensorflow:loss = 0.12659462, step = 39700 (5.361 sec)
INFO:tensorflow:global_step/sec: 18.6764
INFO:tensorflow:loss = 0.044384975, step = 39800 (5.353 sec)
INFO:tensorflow:global_step/sec: 18.703
INFO:tensorflow:loss = 0.060028516, step = 39900 (5.345 sec)
INFO:tensorflow:global_step/sec: 18.5951
INFO:tensorflow:loss = 0.06484838, step = 40000 (5.381 sec)
INFO:tensorflow:global_step/sec: 18.6606
INFO:tensorflow:loss = 0.17267734, step = 40100 (5.356 sec)
INFO:tensorflow:global_step/sec: 18.6997
INFO:tensorflow:loss = 0.20751953, step = 40200 (5.352 sec)
INFO:tensorflow:global_step/sec: 18.6636
INFO:tensorflow:loss = 0.08263206, step = 40300 (5.356 sec)
INFO:tensorflow:global_step/sec: 18.6641
INFO:tensorflow:loss = 0.13570371, step = 40400 (5.357 sec)
INFO:tensorflow:global_step/sec: 18.7275
INFO:tensorflow:loss = 0.09996411, step = 40500 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.678
INFO:tensorflow:loss = 0.090212375, step = 40600 (5.354 sec)
INFO:tensorflow:global_step/sec: 18.6421
INFO:tensorflow:loss = 0.06924181, step = 40700 (5.362 sec)
INFO:tensorflow:global_step/sec: 18.6637
INFO:tensorflow:loss = 0.08718406, step = 40800 (5.358 sec)

INFO:tensorflow:global_step/sec: 18.6948
INFO:tensorflow:loss = 0.09917697, step = 40900 (5.353 sec)
INFO:tensorflow:global_step/sec: 18.6692
INFO:tensorflow:loss = 0.056538787, step = 41000 (5.355 sec)
INFO:tensorflow:global_step/sec: 18.6736
INFO:tensorflow:loss = 0.16941313, step = 41100 (5.356 sec)
INFO:tensorflow:global_step/sec: 18.677
INFO:tensorflow:loss = 0.06762222, step = 41200 (5.354 sec)
INFO:tensorflow:global_step/sec: 18.6512
INFO:tensorflow:loss = 0.08012302, step = 41300 (5.361 sec)
INFO:tensorflow:global_step/sec: 18.6502
INFO:tensorflow:loss = 0.14096197, step = 41400 (5.362 sec)
INFO:tensorflow:global_step/sec: 18.6489
INFO:tensorflow:loss = 0.059730887, step = 41500 (5.364 sec)
INFO:tensorflow:global_step/sec: 18.6731
INFO:tensorflow:loss = 0.106723584, step = 41600 (5.352 sec)
INFO:tensorflow:global_step/sec: 18.6814
INFO:tensorflow:loss = 0.116302654, step = 41700 (5.355 sec)
INFO:tensorflow:global_step/sec: 18.6823
INFO:tensorflow:loss = 0.08388617, step = 41800 (5.352 sec)
INFO:tensorflow:global_step/sec: 18.6787
INFO:tensorflow:loss = 0.0825418, step = 41900 (5.352 sec)
INFO:tensorflow:global_step/sec: 18.6912
INFO:tensorflow:loss = 0.07412017, step = 42000 (5.350 sec)
INFO:tensorflow:global_step/sec: 18.6908
INFO:tensorflow:loss = 0.033002466, step = 42100 (5.352 sec)
INFO:tensorflow:global_step/sec: 18.6788
INFO:tensorflow:loss = 0.10000582, step = 42200 (5.354 sec)
INFO:tensorflow:global_step/sec: 18.692
INFO:tensorflow:loss = 0.034484766, step = 42300 (5.352 sec)
INFO:tensorflow:global_step/sec: 18.7181
INFO:tensorflow:loss = 0.12553173, step = 42400 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.6946
INFO:tensorflow:loss = 0.113253005, step = 42500 (5.352 sec)
INFO:tensorflow:global_step/sec: 18.6682
INFO:tensorflow:loss = 0.027004426, step = 42600 (5.354 sec)
INFO:tensorflow:global_step/sec: 18.7173
INFO:tensorflow:loss = 0.04007616, step = 42700 (5.348 sec)
INFO:tensorflow:global_step/sec: 18.6969
INFO:tensorflow:loss = 0.06631834, step = 42800 (5.346 sec)
INFO:tensorflow:global_step/sec: 18.7884
INFO:tensorflow:loss = 0.10038675, step = 42900 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7604
INFO:tensorflow:loss = 0.06282009, step = 43000 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7687
INFO:tensorflow:loss = 0.09468497, step = 43100 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7409
INFO:tensorflow:loss = 0.06437745, step = 43200 (5.338 sec)
INFO:tensorflow:global_step/sec: 18.7368
INFO:tensorflow:loss = 0.0410128, step = 43300 (5.336 sec)
INFO:tensorflow:global_step/sec: 18.7418
INFO:tensorflow:loss = 0.10914912, step = 43400 (5.334 sec)
INFO:tensorflow:global_step/sec: 18.7985
INFO:tensorflow:loss = 0.05437616, step = 43500 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7183
INFO:tensorflow:loss = 0.08925009, step = 43600 (5.343 sec)
INFO:tensorflow:global_step/sec: 18.7408
INFO:tensorflow:loss = 0.1605923, step = 43700 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.7354
INFO:tensorflow:loss = 0.13517779, step = 43800 (5.334 sec)
INFO:tensorflow:global_step/sec: 18.7303
INFO:tensorflow:loss = 0.03921074, step = 43900 (5.341 sec)

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INFO:tensorflow:loss = 0.05921074, step = 43900 (5.341 sec)
INFO:tensorflow:global_step/sec: 18.7296
INFO:tensorflow:loss = 0.061984662, step = 44000 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.7477
INFO:tensorflow:loss = 0.10965531, step = 44100 (5.339 sec)
INFO:tensorflow:global_step/sec: 18.7606
INFO:tensorflow:loss = 0.119274825, step = 44200 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.736
INFO:tensorflow:loss = 0.13433076, step = 44300 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.7805
INFO:tensorflow:loss = 0.030943742, step = 44400 (5.324 sec)
INFO:tensorflow:global_step/sec: 18.7762
INFO:tensorflow:loss = 0.11789001, step = 44500 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7536
INFO:tensorflow:loss = 0.08415388, step = 44600 (5.333 sec)
INFO:tensorflow:global_step/sec: 18.7742
INFO:tensorflow:loss = 0.07781195, step = 44700 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7714
INFO:tensorflow:loss = 0.045470815, step = 44800 (5.325 sec)
INFO:tensorflow:Saving checkpoints for 44830 into mnist_vgg13_model/model.ckpt.
INFO:tensorflow:global_step/sec: 17.9777
INFO:tensorflow:loss = 0.09616194, step = 44900 (5.564 sec)
INFO:tensorflow:global_step/sec: 18.7593
INFO:tensorflow:loss = 0.07288052, step = 45000 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7654
INFO:tensorflow:loss = 0.0871718, step = 45100 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7272
INFO:tensorflow:loss = 0.07401398, step = 45200 (5.340 sec)
INFO:tensorflow:global_step/sec: 18.6941
INFO:tensorflow:loss = 0.06493436, step = 45300 (5.351 sec)
INFO:tensorflow:global_step/sec: 18.7128
INFO:tensorflow:loss = 0.077635564, step = 45400 (5.340 sec)
INFO:tensorflow:global_step/sec: 18.683
INFO:tensorflow:loss = 0.039641485, step = 45500 (5.355 sec)
INFO:tensorflow:global_step/sec: 18.7906
INFO:tensorflow:loss = 0.09603873, step = 45600 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7704
INFO:tensorflow:loss = 0.050860066, step = 45700 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7025
INFO:tensorflow:loss = 0.021771498, step = 45800 (5.344 sec)
INFO:tensorflow:global_step/sec: 18.6962
INFO:tensorflow:loss = 0.063914336, step = 45900 (5.349 sec)
INFO:tensorflow:global_step/sec: 18.7794
INFO:tensorflow:loss = 0.023589687, step = 46000 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.7705
INFO:tensorflow:loss = 0.093516886, step = 46100 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7994
INFO:tensorflow:loss = 0.026388865, step = 46200 (5.319 sec)
INFO:tensorflow:global_step/sec: 18.8118
INFO:tensorflow:loss = 0.05833254, step = 46300 (5.315 sec)
INFO:tensorflow:global_step/sec: 18.7798
INFO:tensorflow:loss = 0.06823339, step = 46400 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7468
INFO:tensorflow:loss = 0.06664146, step = 46500 (5.335 sec)
INFO:tensorflow:global_step/sec: 18.7732
INFO:tensorflow:loss = 0.030576808, step = 46600 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7556
INFO:tensorflow:loss = 0.1030162, step = 46700 (5.335 sec)
INFO:tensorflow:global_step/sec: 18.7595
INFO:tensorflow:loss = 0.047231816, step = 46800 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7571
INFO:tensorflow:loss = 0.0426122, step = 46900 (5.328 sec)
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INFO:tensorflow:global_step/sec: 18.7877
INFO:tensorflow:loss = 0.10371239, step = 47000 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7688
INFO:tensorflow:loss = 0.15148096, step = 47100 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7403
INFO:tensorflow:loss = 0.03580879, step = 47200 (5.336 sec)
INFO:tensorflow:global_step/sec: 18.7511
INFO:tensorflow:loss = 0.07503275, step = 47300 (5.336 sec)
INFO:tensorflow:global_step/sec: 18.7578
INFO:tensorflow:loss = 0.061967924, step = 47400 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7928
INFO:tensorflow:loss = 0.026889918, step = 47500 (5.318 sec)
INFO:tensorflow:global_step/sec: 18.8012
INFO:tensorflow:loss = 0.09622049, step = 47600 (5.319 sec)
INFO:tensorflow:global_step/sec: 18.8008
INFO:tensorflow:loss = 0.07172389, step = 47700 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7889
INFO:tensorflow:loss = 0.05862338, step = 47800 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7873
INFO:tensorflow:loss = 0.057027686, step = 47900 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.8063
INFO:tensorflow:loss = 0.041906882, step = 48000 (5.318 sec)
INFO:tensorflow:global_step/sec: 18.781
INFO:tensorflow:loss = 0.031980954, step = 48100 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7514
INFO:tensorflow:loss = 0.07581511, step = 48200 (5.336 sec)
INFO:tensorflow:global_step/sec: 18.7765
INFO:tensorflow:loss = 0.025686104, step = 48300 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7665
INFO:tensorflow:loss = 0.05011961, step = 48400 (5.332 sec)
INFO:tensorflow:global_step/sec: 18.7419
INFO:tensorflow:loss = 0.02269625, step = 48500 (5.333 sec)
INFO:tensorflow:global_step/sec: 18.7676
INFO:tensorflow:loss = 0.020666614, step = 48600 (5.331 sec)
INFO:tensorflow:global_step/sec: 18.7618
INFO:tensorflow:loss = 0.08703964, step = 48700 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7596
INFO:tensorflow:loss = 0.09199286, step = 48800 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7635
INFO:tensorflow:loss = 0.22420569, step = 48900 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7924
INFO:tensorflow:loss = 0.08794145, step = 49000 (5.324 sec)
INFO:tensorflow:global_step/sec: 18.7315
INFO:tensorflow:loss = 0.03201079, step = 49100 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.8048
INFO:tensorflow:loss = 0.14941484, step = 49200 (5.316 sec)
INFO:tensorflow:global_step/sec: 18.7679
INFO:tensorflow:loss = 0.028668163, step = 49300 (5.332 sec)
INFO:tensorflow:global_step/sec: 18.7595
INFO:tensorflow:loss = 0.04218505, step = 49400 (5.331 sec)
INFO:tensorflow:global_step/sec: 18.7608
INFO:tensorflow:loss = 0.057379786, step = 49500 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7302
INFO:tensorflow:loss = 0.026619893, step = 49600 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.7823
INFO:tensorflow:loss = 0.04168414, step = 49700 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.7636
INFO:tensorflow:loss = 0.021851402, step = 49800 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.8007
INFO:tensorflow:loss = 0.1323027, step = 49900 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.8091
INFO:tensorflow:loss = 0.0977711, step = 50000 (5.316 sec)

INFO:tensorflow:loss = 0.0572711, step = 50000 (5.310 sec)
INFO:tensorflow:global_step/sec: 18.7639
INFO:tensorflow:loss = 0.17595196, step = 50100 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7971
INFO:tensorflow:loss = 0.015107814, step = 50200 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7491
INFO:tensorflow:loss = 0.027572818, step = 50300 (5.331 sec)
INFO:tensorflow:global_step/sec: 18.7796
INFO:tensorflow:loss = 0.016175427, step = 50400 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7758
INFO:tensorflow:loss = 0.05870483, step = 50500 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.8019
INFO:tensorflow:loss = 0.034064177, step = 50600 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.769
INFO:tensorflow:loss = 0.020867554, step = 50700 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7713
INFO:tensorflow:loss = 0.014049231, step = 50800 (5.324 sec)
INFO:tensorflow:global_step/sec: 18.7929
INFO:tensorflow:loss = 0.019797608, step = 50900 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.807
INFO:tensorflow:loss = 0.019489542, step = 51000 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7594
INFO:tensorflow:loss = 0.061456054, step = 51100 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7708
INFO:tensorflow:loss = 0.08984715, step = 51200 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7687
INFO:tensorflow:loss = 0.08077195, step = 51300 (5.328 sec)
INFO:tensorflow:global_step/sec: 18.7696
INFO:tensorflow:loss = 0.11300163, step = 51400 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7977
INFO:tensorflow:loss = 0.06144404, step = 51500 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7416
INFO:tensorflow:loss = 0.073882446, step = 51600 (5.337 sec)
INFO:tensorflow:global_step/sec: 18.722
INFO:tensorflow:loss = 0.032234855, step = 51700 (5.344 sec)
INFO:tensorflow:global_step/sec: 18.733
INFO:tensorflow:loss = 0.02602118, step = 51800 (5.336 sec)
INFO:tensorflow:global_step/sec: 18.8015
INFO:tensorflow:loss = 0.08245527, step = 51900 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.8057
INFO:tensorflow:loss = 0.05882182, step = 52000 (5.317 sec)
INFO:tensorflow:global_step/sec: 18.7911
INFO:tensorflow:loss = 0.031912662, step = 52100 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7908
INFO:tensorflow:loss = 0.041882485, step = 52200 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.8047
INFO:tensorflow:loss = 0.03439807, step = 52300 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7775
INFO:tensorflow:loss = 0.020769037, step = 52400 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7906
INFO:tensorflow:loss = 0.039166227, step = 52500 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7757
INFO:tensorflow:loss = 0.03493018, step = 52600 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7851
INFO:tensorflow:loss = 0.012124699, step = 52700 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7946
INFO:tensorflow:loss = 0.056660667, step = 52800 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7534
INFO:tensorflow:loss = 0.056830063, step = 52900 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7801
INFO:tensorflow:loss = 0.009948082, step = 53000 (5.329 sec)
INFO:tensorflow:global_step/sec: 18.7855

```

INFO:tensorflow:loss = 0.04811183, step = 53100 (5.323 sec)
INFO:tensorflow:global_step/sec: 18.7126
INFO:tensorflow:loss = 0.1011002, step = 53200 (5.342 sec)
INFO:tensorflow:global_step/sec: 18.7739
INFO:tensorflow:loss = 0.055529412, step = 53300 (5.327 sec)
INFO:tensorflow:global_step/sec: 18.7622
INFO:tensorflow:loss = 0.11312164, step = 53400 (5.333 sec)
INFO:tensorflow:global_step/sec: 18.7881
INFO:tensorflow:loss = 0.03841501, step = 53500 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.803
INFO:tensorflow:loss = 0.04284593, step = 53600 (5.318 sec)
INFO:tensorflow:global_step/sec: 18.7985
INFO:tensorflow:loss = 0.026217112, step = 53700 (5.316 sec)
INFO:tensorflow:global_step/sec: 18.771
INFO:tensorflow:loss = 0.06873134, step = 53800 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.8054
INFO:tensorflow:loss = 0.009593965, step = 53900 (5.316 sec)
INFO:tensorflow:global_step/sec: 18.7978
INFO:tensorflow:loss = 0.052864876, step = 54000 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7911
INFO:tensorflow:loss = 0.02806877, step = 54100 (5.321 sec)
INFO:tensorflow:global_step/sec: 18.7873
INFO:tensorflow:loss = 0.019597799, step = 54200 (5.322 sec)
INFO:tensorflow:global_step/sec: 18.7822
INFO:tensorflow:loss = 0.017228233, step = 54300 (5.326 sec)
INFO:tensorflow:global_step/sec: 18.7741
INFO:tensorflow:loss = 0.052672286, step = 54400 (5.325 sec)
INFO:tensorflow:global_step/sec: 18.7902
INFO:tensorflow:loss = 0.04304565, step = 54500 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.8065
INFO:tensorflow:loss = 0.007220093, step = 54600 (5.319 sec)
INFO:tensorflow:global_step/sec: 18.7914
INFO:tensorflow:loss = 0.04287889, step = 54700 (5.320 sec)
INFO:tensorflow:global_step/sec: 18.7695
INFO:tensorflow:loss = 0.056346122, step = 54800 (5.330 sec)
INFO:tensorflow:global_step/sec: 18.7598
INFO:tensorflow:loss = 0.10508007, step = 54900 (5.330 sec)
INFO:tensorflow:Saving checkpoints for 55000 into mnist_vgg13_model/model.ckpt.
WARNING:tensorflow:From /tensorflow-1.15.2/python3.6/tensorflow_core/python/training/
Instructions for updating:
Use standard file APIs to delete files with this prefix.
INFO:tensorflow:Loss for final step: 0.022264814.
<tensorflow_estimator.python.estimator.estimator.Estimator at 0x7f5d9300e400>

```

```

eval_input_fn = tf.estimator.inputs.numpy_input_fn(x={"x": eval_data},
                                                    y=eval_labels,
                                                    num_epochs=1,
                                                    shuffle=False)

eval_results = mnist_classifier.evaluate(input_fn=eval_input_fn)
print(eval_results)

```

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```

INFO:tensorflow:Calling model_fn.
(?, 28, 28, 1)
INFO:tensorflow:Done calling model_fn.
INFO:tensorflow:Starting evaluation at 2020-05-08T06:38:13Z
INFO:tensorflow:Graph was finalized.
INFO:tensorflow:Restoring parameters from mnist_vgg13_model/model.ckpt-55000
INFO:tensorflow:Running local_init_op.
INFO:tensorflow:Done running local_init_op.
INFO:tensorflow:Finished evaluation at 2020-05-08-06:38:16
INFO:tensorflow:Saving dict for global step 55000: accuracy = 0.9803, global_step = 5
INFO:tensorflow:Saving 'checkpoint_path' summary for global step 55000: mnist_vgg13_n
{'accuracy': 0.9803, 'loss': 0.061157715, 'global_step': 55000}

```

```

eval_results = mnist_classifier.predict(input_fn=eval_input_fn)
predict = list(eval_results)
final = np.array([])
for p in predict :
    final = np.append(final, p['classes'])
print("The predicted label of index 2:")
print(final[2])

```

```

[?] INFO:tensorflow:Calling model_fn.
(?, 28, 28, 1)
INFO:tensorflow:Done calling model_fn.
INFO:tensorflow:Graph was finalized.
INFO:tensorflow:Restoring parameters from mnist_vgg13_model/model.ckpt-55000
INFO:tensorflow:Running local_init_op.
INFO:tensorflow:Done running local_init_op.
The predicted label of index 2:
1.0

```

```

index = 2
plt.imshow(eval_data[index].reshape(28, 28))
print("The Actual label of index 2 :")
print ("y = " + str(np.squeeze(eval_labels[index])))

```

```

[?] The Actual label of index 2 :
y = 1

```

