```
Using TensorFlow backend.
Downloading data from https://s3.amazonaws.com/img-datasets/mnist.npz
11493376/11490434 [==============================] - 0s 0us/step
WARNING:tensorflow:From /usr/local/lib/python3.6/dist-packages/tensorflow/python/framework/op_def_library.py:263: colocate_with (from tensorflow.python.framework.ops) is deprecated and will be removed in a future version.
Instructions for updating:
Colocations handled automatically by placer.
WARNING:tensorflow:From /usr/local/lib/python3.6/dist-packages/keras/backend/tensorflow_backend.py:3445: calling dropout (from tensorflow.python.ops.nn_ops) with keep_prob is deprecated and will be removed in a future version.
Instructions for updating:
Please use `rate` instead of `keep_prob`. Rate should be set to `rate = 1 - keep_prob`.
```

Layer (type)	Output Shape	Param #
conv2d_1 (Conv2D)	(None, 28, 28, 32)	320
max_pooling2d_1 (MaxPooling2	(None, 9, 9, 32)	0
flatten_1 (Flatten)	(None, 2592)	0
dense_1 (Dense)	(None, 64)	165952
dropout_1 (Dropout)	(None, 64)	0
dense_2 (Dense)	(None, 128)	8320
dropout_2 (Dropout)	(None, 128)	0
dense_3 (Dense)	(None, 10)	1290

```
Total params: 175,882
Trainable params: 175,882
Non-trainable params: 0

None
Training :
WARNING:tensorflow:From /usr/local/lib/python3.6/dist-packages/tensorflow/python/ops/math_ops.py:3066: to_int32 (from tensorflow.python.ops.math_ops) is deprecated and will be removed in a future version.
Instructions for updating:
Use tf.cast instead.
Epoch 1/10
60000/60000 [==============================] - 11s 192us/step - loss: 0.4888 - acc: 0.8449
Epoch 2/10
60000/60000 [==============================] - 7s 111us/step - loss: 0.2158 - acc: 0.9347
Epoch 3/10
60000/60000 [==============================] - 7s 111us/step - loss: 0.1661 - acc: 0.9495
Epoch 4/10
60000/60000 [==============================] - 7s 112us/step - loss: 0.1414 - acc: 0.9567
Epoch 5/10
60000/60000 [==============================] - 7s 113us/step - loss: 0.1228 - acc: 0.9622
Epoch 6/10
60000/60000 [==============================] - 7s 112us/step - loss: 0.1134 - acc: 0.9653
Epoch 7/10
60000/60000 [==============================] - 7s 112us/step - loss: 0.1024 - acc: 0.9687
Epoch 8/10
60000/60000 [==============================] - 7s 112us/step - loss: 0.0958 - acc: 0.9700
Epoch 9/10
60000/60000 [==============================] - 7s 111us/step - loss: 0.0882 - acc: 0.9725
Epoch 10/10
60000/60000 [==============================] - 7s 112us/step - loss: 0.0821 - acc: 0.9739
Accuracy: 98.6100%
```

Layer (type)	Output Shape	Param #
conv2d_2 (Conv2D)	(None, 28, 28, 32)	320
max_pooling2d_2 (MaxPooling2	(None, 9, 9, 32)	0
conv2d_3 (Conv2D)	(None, 9, 9, 64)	18496
flatten_2 (Flatten)	(None, 5184)	0
dense_4 (Dense)	(None, 64)	331840
dropout_3 (Dropout)	(None, 64)	0
dense_5 (Dense)	(None, 128)	8320
dropout_4 (Dropout)	(None, 128)	0
dense_6 (Dense)	(None, 10)	1290

```
Total params: 360,266
Trainable params: 360,266
Non-trainable params: 0

None
Training :
Epoch 1/10
60000/60000 [==============================] - 9s 150us/step - loss: 0.4258 - acc: 0.8618
Epoch 2/10
60000/60000 [==============================] - 9s 143us/step - loss: 0.1681 - acc: 0.9479
Epoch 3/10
60000/60000 [==============================] - 9s 144us/step - loss: 0.1226 - acc: 0.9639
Epoch 4/10
60000/60000 [==============================] - 9s 143us/step - loss: 0.0965 - acc: 0.9705
Epoch 5/10
60000/60000 [==============================] - 9s 143us/step - loss: 0.0839 - acc: 0.9743
Epoch 6/10
60000/60000 [==============================] - 9s 143us/step - loss: 0.0737 - acc: 0.9773
Epoch 7/10
60000/60000 [==============================] - 9s 143us/step - loss: 0.0668 - acc: 0.9795
Epoch 8/10
60000/60000 [==============================] - 9s 143us/step - loss: 0.0585 - acc: 0.9823
Epoch 9/10
60000/60000 [==============================] - 9s 144us/step - loss: 0.0503 - acc: 0.9835
Epoch 10/10
60000/60000 [==============================] - 9s 145us/step - loss: 0.0487 - acc: 0.9841
Accuracy: 99.1200%
```

Layer (type)	Output Shape	Param #
conv2d_4 (Conv2D)	(None, 28, 28, 32)	320
max_pooling2d_3 (MaxPooling2	(None, 9, 9, 32)	0
conv2d_5 (Conv2D)	(None, 9, 9, 64)	18496
conv2d_6 (Conv2D)	(None, 9, 9, 64)	36928
flatten_3 (Flatten)	(None, 5184)	0
dense_7 (Dense)	(None, 64)	331840
dropout_5 (Dropout)	(None, 64)	0
dense_8 (Dense)	(None, 128)	8320
dropout_6 (Dropout)	(None, 128)	0
dense_9 (Dense)	(None, 10)	1290

```
Total params: 397,194
Trainable params: 397,194
Non-trainable params: 0

None
Training :
Epoch 1/10
60000/60000 [==============================] - 12s 198us/step - loss: 0.3529 - acc: 0.8890
Epoch 2/10
60000/60000 [==============================] - 11s 187us/step - loss: 0.1254 - acc: 0.9634
Epoch 3/10
60000/60000 [==============================] - 11s 188us/step - loss: 0.0860 - acc: 0.9755
Epoch 4/10
60000/60000 [==============================] - 11s 187us/step - loss: 0.0699 - acc: 0.9805
Epoch 5/10
60000/60000 [==============================] - 11s 189us/step - loss: 0.0566 - acc: 0.9839
Epoch 6/10
60000/60000 [==============================] - 11s 188us/step - loss: 0.0485 - acc: 0.9859
Epoch 7/10
60000/60000 [==============================] - 11s 188us/step - loss: 0.0430 - acc: 0.9874
Epoch 8/10
60000/60000 [==============================] - 11s 187us/step - loss: 0.0359 - acc: 0.9891
Epoch 9/10
60000/60000 [==============================] - 11s 188us/step - loss: 0.0345 - acc: 0.9898
Epoch 10/10
60000/60000 [==============================] - 11s 188us/step - loss: 0.0303 - acc: 0.9912
Accuracy: 99.1500%
```

Layer (type)	Output Shape	Param #
conv2d_7 (Conv2D)	(None, 28, 28, 32)	320
max_pooling2d_4 (MaxPooling2	(None, 9, 9, 32)	0

Layer (type)	Output Shape	Param #
conv2d_8 (Conv2D)	(None, 9, 9, 64)	18496
conv2d_9 (Conv2D)	(None, 9, 9, 64)	36928
conv2d_10 (Conv2D)	(None, 9, 9, 64)	36928
flatten_4 (Flatten)	(None, 5184)	0
dense_10 (Dense)	(None, 64)	331840
dropout_7 (Dropout)	(None, 64)	0
dense_11 (Dense)	(None, 128)	8320
dropout_8 (Dropout)	(None, 128)	0
dense_12 (Dense)	(None, 10)	1290

```
=================================================================
Total params: 434,122
Trainable params: 434,122
Non-trainable params: 0
_____
None
Training :
Epoch 1/10
60000/60000 [==============================] - 15s 248us/step - loss: 0.3549 - acc: 0.8867
Epoch 2/10
60000/60000 [==============================] - 14s 230us/step - loss: 0.1112 - acc: 0.9684
Epoch 3/10
60000/60000 [==============================] - 14s 229us/step - loss: 0.0776 - acc: 0.9777
Epoch 4/10
60000/60000 [==============================] - 14s 227us/step - loss: 0.0650 - acc: 0.9824
Epoch 5/10
60000/60000 [==============================] - 14s 229us/step - loss: 0.0505 - acc: 0.9855
Epoch 6/10
60000/60000 [==============================] - 14s 229us/step - loss: 0.0467 - acc: 0.9868
Epoch 7/10
60000/60000 [==============================] - 14s 228us/step - loss: 0.0423 - acc: 0.9883
Epoch 8/10
60000/60000 [==============================] - 14s 228us/step - loss: 0.0337 - acc: 0.9907
Epoch 9/10
60000/60000 [==============================] - 14s 228us/step - loss: 0.0326 - acc: 0.9907
Epoch 10/10
60000/60000 [==============================] - 14s 227us/step - loss: 0.0283 - acc: 0.9919
Accuracy: 99.3000%
```

Layer (type)	Output Shape	Param #
conv2d_11 (Conv2D)	(None, 28, 28, 32)	320
max_pooling2d_5 (MaxPooling2	(None, 9, 9, 32)	0
conv2d_12 (Conv2D)	(None, 9, 9, 64)	18496
conv2d_13 (Conv2D)	(None, 9, 9, 64)	36928
conv2d_14 (Conv2D)	(None, 9, 9, 64)	36928
conv2d_15 (Conv2D)	(None, 9, 9, 64)	36928
flatten_5 (Flatten)	(None, 5184)	0
dense_13 (Dense)	(None, 64)	331840
dropout_9 (Dropout)	(None, 64)	0
dense_14 (Dense)	(None, 128)	8320
dropout_10 (Dropout)	(None, 128)	0
dense_15 (Dense)	(None, 10)	1290

```
=================================================================
Total params: 471,050
Trainable params: 471,050
Non-trainable params: 0
_____
None
Training :
Epoch 1/10
60000/60000 [==============================] - 19s 311us/step - loss: 0.3920 - acc: 0.8722
Epoch 2/10
60000/60000 [==============================] - 18s 297us/step - loss: 0.1318 - acc: 0.9617
Epoch 3/10
60000/60000 [==============================] - 18s 299us/step - loss: 0.0877 - acc: 0.9762
Epoch 4/10
60000/60000 [==============================] - 18s 298us/step - loss: 0.0711 - acc: 0.9803
Epoch 5/10
60000/60000 [==============================] - 18s 299us/step - loss: 0.0576 - acc: 0.9834
Epoch 6/10
60000/60000 [==============================] - 18s 298us/step - loss: 0.0511 - acc: 0.9855
Epoch 7/10
60000/60000 [==============================] - 18s 298us/step - loss: 0.0439 - acc: 0.9877
Epoch 8/10
60000/60000 [==============================] - 18s 299us/step - loss: 0.0384 - acc: 0.9887
Epoch 9/10
60000/60000 [==============================] - 18s 298us/step - loss: 0.0329 - acc: 0.9905
Epoch 10/10
60000/60000 [==============================] - 18s 297us/step - loss: 0.0340 - acc: 0.9898
Accuracy: 99.3900%
```