TensorFlow, why there are 3 files after saving the model?

Asked 4 years, 6 months ago Active 3 months ago Viewed 83k times

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Having read the docs, I saved a model in TensorFlow , here is my demo code:

```
# Create some variables.
v1 = tf.Variable(..., name="v1")
v2 = tf.Variable(..., name="v2")
...
# Add an op to initialize the variables.
init_op = tf.global_variables_initializer()

# Add ops to save and restore all the variables.
saver = tf.train.Saver()

# Later, launch the model, initialize the variables, do some work, save the
# variables to disk.
with tf.Session() as sess:
  sess.run(init_op)
  # Do some work with the model.
  ..
  # Save the variables to disk.
  save_path = saver.save(sess, "/tmp/model.ckpt")
  print("Model saved in file: %s" % save_path)
```

but after that, I found there are 3 files

```
model.ckpt.data-00000-of-00001
model.ckpt.index
model.ckpt.meta
```

And I can't restore the model by restore the model.ckpt file, since there is no such file. Here is my code

```
with tf.Session() as sess:
  # Restore variables from disk.
  saver.restore(sess, "/tmp/model.ckpt")
```

So, why there are 3 files?

tensorflow

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edited May 21 '18 at 1:19

asked Dec 21 '16 at 14:23

GoingMyWay

13.9k 24 84 123

2 Did you figure out how to address this ? How can I load the model again (using Keras) ? – rajkiran Oct 11 '17 at 23:01

4 Answers

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Try this:

```
with tf.Session() as sess:
  saver = tf.train.import_meta_graph('/tmp/model.ckpt.meta')
  saver.restore(sess, "/tmp/model.ckpt")
```

The TensorFlow save method saves three kinds of files because it stores the **graph structure**separately from the **variable values**. The `.meta` file describes the saved graph structure, so you need to import it before restoring the checkpoint (otherwise it doesn't know what variables the saved checkpoint values correspond to).

Alternatively, you could do this:

```
# Recreate the EXACT SAME variables
v1 = tf.Variable(..., name="v1")
v2 = tf.Variable(..., name="v2")

...

# Now load the checkpoint variable values
with tf.Session() as sess:
  saver = tf.train.Saver()
  saver.restore(sess, "/tmp/model.ckpt")
```

Even though there is no file named `model.ckpt` , you still refer to the saved checkpoint by that name when restoring it. From the saver.py source code:

> Users only need to interact with the user-specified prefix... instead of any physical pathname.

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edited May 20 '18 at 23:24

trdngy
589 5 22

answered Dec 21 '16 at 22:58

T.K. Bartel
1,315 1 11 8

1 so the .index and the .data are not used? When are those 2 files used, then? – ajfbiw.s May 3 '17 at 21:27

29 @ajfbiw.s .meta stores the graph structure, .data stores the values of each variable in the graph, .index identifies the checkpiont. So in the example above: import_meta_graph uses the .meta, and saver.restore uses the .data and .index – T.K. Bartel May 4 '17 at 20:06

Oh, I see. Thanks. – ajfbiw.s May 4 '17 at 22:19

1 Any chance you saved the model with a different version of TensorFlow than you're using to load it? (github.com/tensorflow/tensorflow/issues/5639) – T.K. Bartel May 5 '17 at 3:10

5 Does anyone know what that `00000` and `00001` numbers mean? in `variables.data-?????-of-?????` file – Ivan Talalaev Sep 7 '18 at 14:44