




1. Preparation

1.1 Place the TensorFlow installation package into Raspberry Pi through WinSCP software.

 grpcio-1.32.0-cp37-cp37m-linux_armv7l.whl	2020/9/29 17:39	WHL 文件	32,004 KB
 h5py-2.10.0-cp37-cp37m-linux_armv7l.whl	2020/9/29 18:02	WHL 文件	4,572 KB
 tensorflow-1.14.0-cp37-none-linux_armv7l.whl	2020/9/25 20:08	WHL 文件	85,924 KB

We put it into /home/pi directory

1.2 Then, input command: `ls` to check installation package, as shown below.

```
pi@raspberrypi:~$ ls
Adafruit_Python_PCA9685
audio.mp3
Bookshelf
boot.sh
Desktop
Documents
Downloads
grpcio-1.32.0-cp37-cp37m-linux_armv7l.whl
h5py-2.10.0-cp37-cp37m-linux_armv7l.whl
mjpg-streamer-master
Music
Pictures
Public
Templates
tensorflow-1.14.0-cp37-none-linux_armv7l.whl
videos
yahboom
```

2. Install tensorflow

2.1 Enter the following instructions to install pip related tools.

```
sudo apt-get install python3-pip python3-dev
```

2.2 Enter the following commands in order.

```
pip3 install h5py-2.10.0-cp37-cp37m-linux_armv7l.whl
```

```
pip3 install grpcio-1.32.0-cp37-cp37m-linux_armv7l.whl
```

```
pip3 install tensorflow-1.14.0-cp37-none-linux_armv7l.whl
```

Because I have already installed h5py, running the system again will tell you: "Requirement already satisfied". As shown below.

```
pi@raspberrypi:~$ pip3 install h5py-2.10.0-cp37-cp37m-linux_armv7l.whl
Looking in indexes: https://pypi.org/simple, https://www.piwheels.org/simple
Requirement already satisfied: h5py==2.10.0 from file:///home/pi/h5py-2.10.0-cp37-cp37m-linux_armv7l.whl in ./local/lib/python3.7/site-packages (2.10.0)
Requirement already satisfied: numpy>=1.7 in /usr/lib/python3/dist-packages (from h5py==2.10.0) (1.16.2)
Requirement already satisfied: six in /usr/lib/python3/dist-packages (from h5py==2.10.0) (1.12.0)
```

If it is the first installation, a successful English prompt will appear at the bottom to inform you that the installation was successful.

But it is best to read through the installation report. If there are errors, it may be due to some plugins being disconnected due to network reasons.

You can run the installation instructions repeatedly to remedy them

If the remedy fails, you can try to ignore the error and force the installation, with the following instructions:

```
pip3 install --ignore-installed tensorflow-1.14.0-cp37-none-linux_armv7l.whl
```

3. Test tensorflow

After completing the installation, enter the following instructions in sequence on the terminal to check if TensorFlow has been successfully installed.

```
python3
import tensorflow as tf
tf.__version__
```

If the installed version number appears, it indicates successful installation, and the test results are as follows.

```
_np_quint8 = np.dtype(["quint8", np.uint8, 1])
/home/pi/.local/lib/python3.7/site-packages/tensorboard/compat/tensorflow_stub/d
types.py:543: FutureWarning: Passing (type, 1) or 'ltype' as a synonym of type i
s deprecated; in a future version of numpy, it will be understood as (type, (1,
)) / '(1,)type'.
_np_qint16 = np.dtype(["qint16", np.int16, 1])
/home/pi/.local/lib/python3.7/site-packages/tensorboard/compat/tensorflow_stub/d
types.py:544: FutureWarning: Passing (type, 1) or 'ltype' as a synonym of type i
s deprecated; in a future version of numpy, it will be understood as (type, (1,
)) / '(1,)type'.
_np_quint16 = np.dtype(["quint16", np.uint16, 1])
/home/pi/.local/lib/python3.7/site-packages/tensorboard/compat/tensorflow_stub/d
types.py:545: FutureWarning: Passing (type, 1) or 'ltype' as a synonym of type i
s deprecated; in a future version of numpy, it will be understood as (type, (1,
)) / '(1,)type'.
_np_qint32 = np.dtype(["qint32", np.int32, 1])
/home/pi/.local/lib/python3.7/site-packages/tensorboard/compat/tensorflow_stub/d
types.py:550: FutureWarning: Passing (type, 1) or 'ltype' as a synonym of type i
s deprecated; in a future version of numpy, it will be understood as (type, (1,
)) / '(1,)type'.
np_resource = np.dtype(["resource", np.ubyte, 1])
>>> tf.__version__
'1.14.0'
>>>
```

Enter the following command to query the TensorFlow installation path.

```
tf.__Path__
```

```
_np_qint16 = np.dtype(["qint16", np.int16, 1])
/home/pi/.local/lib/python3.7/site-packages/tensorboard/compat/tensorflow_stub/d
types.py:544: FutureWarning: Passing (type, 1) or 'ltype' as a synonym of type i
s deprecated; in a future version of numpy, it will be understood as (type, (1,
)) / '(1,)type'.
_np_quint16 = np.dtype(["quint16", np.uint16, 1])
/home/pi/.local/lib/python3.7/site-packages/tensorboard/compat/tensorflow_stub/d
types.py:545: FutureWarning: Passing (type, 1) or 'ltype' as a synonym of type i
s deprecated; in a future version of numpy, it will be understood as (type, (1,
)) / '(1,)type'.
_np_qint32 = np.dtype(["qint32", np.int32, 1])
/home/pi/.local/lib/python3.7/site-packages/tensorboard/compat/tensorflow_stub/d
types.py:550: FutureWarning: Passing (type, 1) or 'ltype' as a synonym of type i
s deprecated; in a future version of numpy, it will be understood as (type, (1,
)) / '(1,)type'.
np_resource = np.dtype(["resource", np.ubyte, 1])
>>> tf.__version__
'1.14.0'
>>> tf.__path__
['/home/pi/.local/lib/python3.7/site-packages/tensorflow/python/keras/api/_v1',
'/home/pi/.local/lib/python3.7/site-packages/tensorflow_estimator/python/estimato
r/api/_v1', '/home/pi/.local/lib/python3.7/site-packages/tensorflow', '/home/pi
/.local/lib/python3.7/site-packages/tensorflow/_api/v1']
>>>
```

Initialize a Tensorflow constant: Hello, Tensorflow string, and name it hello as a calculation module.

```
hello = tf.constant('Hello,Tensorflow')
```

```
sess = tf.Session()
```

#Start a session

```
print(sess.run(hello))
```

#Using Session Execution Hello Calculation Module

```
types.py:543: FutureWarning: Passing (type, 1) or '1type' as a synonym of type i
s deprecated; in a future version of numpy, it will be understood as (type, (1,
) / '(1,)type'.
_np_qint16 = np.dtype(["qint16", np.int16, 1])
/home/pi/.local/lib/python3.7/site-packages/tensorboard/compat/tensorflow_stub/d
types.py:544: FutureWarning: Passing (type, 1) or '1type' as a synonym of type i
s deprecated; in a future version of numpy, it will be understood as (type, (1,
) / '(1,)type'.
_np_quint16 = np.dtype(["quint16", np.uint16, 1])
/home/pi/.local/lib/python3.7/site-packages/tensorboard/compat/tensorflow_stub/d
types.py:545: FutureWarning: Passing (type, 1) or '1type' as a synonym of type i
s deprecated; in a future version of numpy, it will be understood as (type, (1,
) / '(1,)type'.
_np_qint32 = np.dtype(["qint32", np.int32, 1])
/home/pi/.local/lib/python3.7/site-packages/tensorboard/compat/tensorflow_stub/d
types.py:550: FutureWarning: Passing (type, 1) or '1type' as a synonym of type i
s deprecated; in a future version of numpy, it will be understood as (type, (1,
) / '(1,)type'.
np_resource = np.dtype(["resource", np.ubyte, 1])
>>> hello = tf.constant('Hello,Tensorflow')
>>> sess = tf.Session()
>>> print(sess.run(hello))
b'Hello,Tensorflow'
```