



Keras and TensorFlow installation

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##How to install Keras with TensorFlow backend

macOS Sierra

Follow [this tutorial](#).

Ubuntu 14.04

1. Install Bazel

```
$ sudo add-apt-repository ppa:webupd8team/java $ sudo apt-get update $ sudo apt-get install oracle-java8-installer $ echo "deb [arch=amd64] http://storage.googleapis.com/bazel-apt stable jdk1.8" | sudo tee etc/apt/sources.list.d/bazel.list $ curl https://bazel.build/bazel-release.pub.gpg | sudo apt-key add - $ sudo apt-get update && sudo apt-get install bazel $ sudo apt-get upgrade bazel ""
```

2. Install Cuda Toolkit 8.0 from [here](#).

- 2.1. Download [this installer](#)

- 2.2. Run `$ sudo sh cuda_8.0.44_linux.run` and follow command-line prompts.

- 2.3. Run `$ PATH=$PATH:/usr/bin/cuda-8.0` to add Cuda Toolkit to the environment variable PATH.

3. Install cuDNN 5 from [here](#). This will require you to login with a NVIDIA account to download the file. After downloading, do:

```
tar xvfz cudnn-8.0-linux-x64-v5.1-ga.tgz
sudo cp -P cuda/include/cudnn.h /usr/local/cuda-8.0/include
sudo cp -P cuda/lib64/libcudnn* /usr/local/cuda-8.0/lib64
sudo chmod a+r /usr/local/cuda-8.0/include/cudnn.h /usr/local/cuda-8.0/lib64/libcudnn*
```

4. Run:

```
$ sudo apt-get install libcupti-dev
```

5. Install pip:

```
$ sudo apt-get install python-pip python-dev
```

6. Install other Python dependencies:

```
$ sudo apt-get install python3-numpy python3-dev python3-wheel
```

7. Install Tensorflow using pip:

```
$ pip install tensorflow-gpu
```

8. Install Keras using pip:

```
$ pip install keras
```

9. Enable GPU support:

```
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/local/cuda-8.0/lib64:/usr/local/cuda-8.0/e:
export CUDA_HOME=/usr/local/cuda-8.0
```

10. Test Tensorflow installation:

```
$ python
...
>>> import tensorflow as tf
>>> hello = tf.constant('Hello, TensorFlow!')
>>> sess = tf.Session()
>>> print(sess.run(hello))
Hello, TensorFlow!
>>> a = tf.constant(10)
>>> b = tf.constant(32)
>>> print(sess.run(a + b))
42
>>>
```

11. Test Keras installation:

```
$ python
...
>>> import keras
Using TensorFlow backend
>>> exit()
```

12. Edit `~/.keras/keras.json` file such that:

```
{
  "image_dim_ordering": "th",
  "epsilon": 1e-07,
  "floatx": "float32",
  "backend": "tensorflow"
}
```

Note: Apparently, tensorflow 0.12 requires the `image_dim_ordering` parameter in `~/.keras/keras.json` to be fixed as `'th'` instead of `'tf'`. We don't know why, but it works if you do so.

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