

Bitfusion Guide to TensorFlow Installation

Bitfusion Guides

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Bitfusion Guide to TensorFlow Installation

You can install TensorFlow as a pip package. So this document describes how to install three items.

- pip
- TensorFlow (a framework)
- TensorFlow benchmarks (apps that use the framework)

Installing pip

Here, we will only install a prebuilt, gpu-version of TensorFlow. But first, we install the pip installer and a common library for building python applications. After those prerequisites, TensorFlow is easy. Here we install both pip and pip3 so as to handle whatever environment is actually in use on your system. But if you know which you need, you can just install one. Nevertheless, if you want both, they should co-reside peacefully on the same system.

Install pip or pip3 on Ubuntu

```
sudo apt install python-pip
sudo apt install python3-pip
```

Install pip and pip3 on CentOS

```
# Install the EPEL repo before pip in order to find the pip package.
sudo yum install epel-release
sudo yum update
sudo yum repolist

# Now install pip and pip3.
sudo yum install python-pip
sudo yum install python36-pip
```

Install pip and pip3 on RHEL7

```
sudo yum install python-pip
sudo yum install python36-pip
```

Installing TensorFlow

Now you can install a prerequisite and TensorFlow:

Text

```
sudo pip[3] install absl-py
sudo pip[3] install tensorflow-gpu==1.13.1 # or other version
```

Above, we installed version 1.13.1 of TensorFlow. How do you know which versions are available (leaving aside the question of which of those you want)? Well, here is a clever hack to force pip to tell you what versions are available for a given package. In this example, the package is tensorflow-gpu. It works by forcing a mismatch failure, because the error message lists the possible values.

Hack to See Which Versions of TensorFlow Are Available

```
$ pip[3] install tensorflow-gpu==
Collecting tensorflow-gpu==
  Could not find a version that satisfies the requirement tensorflow-gpu== (from versions:
  0.12.0rc0, 0.12.0rc1, 0.12.0, 0.12.1, 1.0.0, 1.0.1, 1.1.0rc0, 1.1.0rc1, 1.1.0rc2, 1.1.0,
  1.2.0rc0, 1.2.0rc1, 1.2.0rc2, 1.2.0, 1.2.1, 1.3.0rc0, 1.3.0rc1, 1.3.0rc2, 1.3.0,
  1.4.0rc0, 1.4.0rc1, 1.4.0, 1.4.1, 1.5.0rc0, 1.5.0rc1, 1.5.0, 1.5.1, 1.6.0rc0, 1.6.0rc1,
  1.6.0, 1.7.0rc0, 1.7.0rc1, 1.7.0, 1.7.1, 1.8.0rc0, 1.8.0rc1, 1.8.0, 1.9.0rc0, 1.9.0rc1,
  1.9.0rc2, 1.9.0, 1.10.0rc0, 1.10.0rc1)
No matching distribution found for tensorflow-gpu==
You are using pip version 8.1.1, however version 18.0 is available.
You should consider upgrading via the 'pip install --upgrade pip' command.
```

By the way, we do not advise you to follow the above **consider upgrading** message there on the last line.

If you need to uninstall:

Uninstall TensorFlow

```
$ pip uninstall tensorflow-gpu
$
$ # Do not forget to manually uninstall tensorboard, too.
$ # (automatically installed, but not uninstalled).
$
$ pip uninstall tensorboard
$ pip uninstall tensorflow-gpu
$
$ # Do not forget to manually uninstall tensorboard too
$ # (automatically installed, but not uninstalled).
$
$ pip uninstall tensorboard
```

Installing TensorFlow Benchmarks

Now, get the set of benchmarks you can run to exercise TensorFlow and check out the branch that is compatible with your version of TensorFlow.

Uninstall TensorFlow

```
$ git clone https://github.com/tensorflow/benchmarks.git
$
$ # If you want a specific version of the benchmarks compatible
$ # with your version of TensorFlow, list all the branches and
$ # checkout the appropriate one.
$ cd benchmarks
$ git branch -a
* master
  remotes/origin/HEAD -> origin/master
  remotes/origin/cnn_tf_v1.10_compatible
  ...
  remotes/origin/cnn_tf_v1.13_compatible
  ...
$ git checkout cnn_tf_v1.13_compatible
Branch cnn_tf_v1.13_compatible set up to track remote branch cnn_tf_v1.13_compatible
from origin.
Switched to a new branch 'cnn_tf_v1.13_compatible'
$ git branch
* cnn_tf_v1.13_compatible
  master
```

A Quick Test

If you want to run a quick test of the TensorFlow benchmarks, here is a command that will run on a server with a GPU (and the driver and CUDA):

Running a TensorFlow Benchmark

```
cd /<dir-where benchmarks-were-cloned>/benchmarks/scripts/tf_cnn_benchmarks
python tf_cnn_benchmarks.py --data_format=NCHW --batch_size=64 --model=resnet50
--variable_update=replicated --local_parameter_device=gpu --nodistortions --num_gpus=1
--num_batches=100 --use_fp16=False
```

The last of the output should appear something like this:

```
90    images/sec: 360.6 +/- 0.1 (jitter = 0.4)    8.094
100   images/sec: 360.6 +/- 0.0 (jitter = 0.3)    8.032
-----
total images/sec: 360.36
-----
```

To test the benchmarks with FlexDirect and a virtual GPU, see the instructions in the [Evaluation Guide](#) sections.

