Install TensorFlow with pip

TensorFlow 2 packages are available

- `tensorflow` —Latest stable release with CPU and GPU support (https://www.tensorflow.org/install/gpu) *(Ubuntu and Windows)*
- `tf-nightly` —Preview build *(unstable)* . Ubuntu and Windows include GPU support (https://www.tensorflow.org/install/gpu) .

Older versions of TensorFlow

For TensorFlow 1.x, CPU and GPU packages are separate:

- `tensorflow==1.15` —Release for CPU-only
- `tensorflow-gpu==1.15` —Release with GPU support (https://www.tensorflow.org/install/gpu) *(Ubuntu and Windows)*

System requirements

- Python 3.6–3.8
  - Python 3.8 support requires TensorFlow 2.2 or later.
- pip 19.0 or later (requires `manylinux2010` support)
- Ubuntu 16.04 or later (64-bit)
- macOS 10.12.6 (Sierra) or later (64-bit) *(no GPU support)*
  - macOS requires pip 20.3 or later
- Windows 7 or later (64-bit)
  - Microsoft Visual C++ Redistributable for Visual Studio 2015, 2017 and 2019 (https://support.microsoft.com/help/2977003/the-latest-supported-visual-c-downloads)
- Raspbian 9.0 or later
- GPU support (https://www.tensorflow.org/install/gpu) requires a CUDA®-enabled card *(Ubuntu and Windows)*

Installing TensorFlow 2 *requires* a newer version of `pip` .

Hardware requirements

- Starting with TensorFlow 1.6, binaries use AVX instructions (https://en.wikipedia.org/wiki/Advanced_Vector_Extensions#CPUs_with_AVX) which may not run on older CPUs.
- Read the GPU support guide (https://www.tensorflow.org/install/gpu) to set up a CUDA®-enabled GPU card on Ubuntu or Windows.

1. Install the Python development environment on your system

Check if your Python environment is already configured:

es Python 3.6–3.8, pip and venv >= 19.0

```
$ python3 --version
$ pip3 --version
```

If these packages are already installed, skip to the next step.
Otherwise, install Python (https://www.python.org/) , the pip package manager (https://pip.pypa.io/en/stable/installing/) , and venv (https://docs.python.org/3/library/venv.html) :

Ubuntu macOS (#macos) Windows (#windows) Raspberry Pi (#raspberry-pi) Other (#other)
(#ubuntu)

```
$ sudo apt update
$ sudo apt install python3-dev python3-pip python3-venv
```

n: Upgrading the *system pip* can cause problems (https://github.com/pypa/pip/issues/5599) .
n a virtual environment, use **`python3 -m pip`** for the commands below. This ensures that you upgrade and use the *Python pip* in *system pip* .

2. Create a virtual environment (recommended)

Python virtual environments are used to isolate package installation from the system.

Ubuntu / macOS Windows (#windows) Conda (#conda)
(#ubuntu--macos)

Create a new virtual environment by choosing a Python interpreter and making a `./venv` directory to hold it:

```
$ python3 -m venv --system-site-packages ./venv
```

Activate the virtual environment using a shell-specific command:

```
$ source ./venv/bin/activate  # sh, bash, or zsh

$ . ./venv/bin/activate.fish  # fish

$ source ./venv/bin/activate.csh  # csh or tcsh
```

When the virtual environment is active, your shell prompt is prefixed with `(venv)` .

Install packages within a virtual environment without affecting the host system setup. Start by upgrading `pip` :

```
(venv) $  pip install --upgrade pip

(venv) $  pip list  # show packages installed within the virtual environment
```

And to exit the virtual environment later:

```
(venv) $  deactivate  # don't exit until you're done using TensorFlow
```

3. Install the TensorFlow pip package

Choose one of the following TensorFlow packages to install from PyPI (https://pypi.org/project/tensorflow/) :

- `tensorflow` —Latest stable release with CPU and GPU support (https://www.tensorflow.org/install/gpu) *(Ubuntu and Windows)* .
- `tf-nightly` —Preview build *(unstable)* . Ubuntu and Windows include GPU support (https://www.tensorflow.org/install/gpu) .
- `tensorflow==1.15` —The final version of TensorFlow 1.x.

ge dependencies are automatically installed. These are listed in the **`setup.py`** s://github.com/tensorflow/tensorflow/blob/master/tensorflow/tools/pip_package/setup.py) file under **`REQUIRED_PACKAGES`** .

Virtual environment installSystem install (#system-insta… (#virtual-environment-install)

```
(venv) $  pip install --upgrade tensorflow
```

Verify the install:

```
(venv) $  python -c "import tensorflow as tf;print(tf.reduce_sum(tf.random.normal([1000,
```

ss: If a tensor is returned, you've installed TensorFlow successfully. Read the tutorials (https://www.tensorflow.org/tutorials) to g
d.

Package location

A few installation mechanisms require the URL of the TensorFlow Python package. The value you specify depends on your Python version.

Version	URL
Linux	
Python 3.6 GPU support	https://storage.googleapis.com/tensorflow/linux/gpu/tensorflow_gpu-2.4.0-cp36-cp36m-manylinux2010_x86_64.whl
Python 3.6 CPU-only	https://storage.googleapis.com/tensorflow/linux/cpu/tensorflow_cpu-2.4.0-cp36-cp36m-manylinux2010_x86_64.whl
Python 3.7 GPU support	https://storage.googleapis.com/tensorflow/linux/gpu/tensorflow_gpu-2.4.0-cp37-cp37m-manylinux2010_x86_64.whl
Python 3.7 CPU-only	https://storage.googleapis.com/tensorflow/linux/cpu/tensorflow_cpu-2.4.0-cp37-cp37m-manylinux2010_x86_64.whl
Python 3.8 GPU support	https://storage.googleapis.com/tensorflow/linux/gpu/tensorflow_gpu-2.4.0-cp38-cp38-manylinux2010_x86_64.whl
Python 3.8 CPU-only	https://storage.googleapis.com/tensorflow/linux/cpu/tensorflow_cpu-2.4.0-cp38-cp38-manylinux2010_x86_64.whl
macOS (CPU-only)	
Python 3.6	https://storage.googleapis.com/tensorflow/mac/cpu/tensorflow-2.4.0-cp36-cp36m-macosx_10_9_x86_64.whl
Python 3.7	https://storage.googleapis.com/tensorflow/mac/cpu/tensorflow-2.4.0-cp37-cp37m-macosx_10_9_x86_64.whl
Python 3.8	https://storage.googleapis.com/tensorflow/mac/cpu/tensorflow-2.4.0-cp38-cp38-macosx_10_14_x86_64.whl
Windows	
Python 3.6 GPU support	https://storage.googleapis.com/tensorflow/windows/gpu/tensorflow_gpu-2.4.0-cp36-cp36m-win_amd64.whl
Python 3.6 CPU-only	https://storage.googleapis.com/tensorflow/windows/cpu/tensorflow_cpu-2.4.0-cp36-cp36m-win_amd64.whl

Python 3.7 GPU support	https://storage.googleapis.com/tensorflow/windows/gpu/tensorflow_gpu-2.4.0-cp37-cp37m-win_amd64.whl
Python 3.7 CPU-only	https://storage.googleapis.com/tensorflow/windows/cpu/tensorflow_cpu-2.4.0-cp37-cp37m-win_amd64.whl
Python 3.8 GPU support	https://storage.googleapis.com/tensorflow/windows/gpu/tensorflow_gpu-2.4.0-cp38-cp38-win_amd64.whl
Python 3.8 CPU-only	https://storage.googleapis.com/tensorflow/windows/cpu/tensorflow_cpu-2.4.0-cp38-cp38-win_amd64.whl
Raspberry PI (CPU-only)	
Python 3, Pi0 or Pi1	https://storage.googleapis.com/tensorflow/raspberrypi/tensorflow-2.3.0rc2-cp35-none-linux_armv6l.whl
Python 3, Pi2 or Pi3	https://storage.googleapis.com/tensorflow/raspberrypi/tensorflow-2.3.0rc2-cp35-none-linux_armv6l.whl

Last updated 2021-04-09 UTC.