

Tensorflow Test Program

Installation of Tensorflow

In [2]: `pip install tensorflow`

Collecting tensorflow
 Downloading tensorflow-2.10.0-cp39-cp39-win_amd64.whl (455.9 MB)
Collecting absl-py>=1.0.0
 Downloading absl_py-1.3.0-py3-none-any.whl (124 kB)
Collecting tensorflow-estimator<2.11,>=2.10.0
 Downloading tensorflow_estimator-2.10.0-py2.py3-none-any.whl (438 kB)
Requirement already satisfied: wrapt>=1.11.0 in c:\users\poona\anaconda3\lib\site-packages (from tensorflow) (1.12.1)
Collecting libclang>=13.0.0
 Downloading libclang-14.0.6-py2.py3-none-win_amd64.whl (14.2 MB)
Collecting keras-preprocessing>=1.1.1
 Downloading Keras_Preprocessing-1.1.2-py2.py3-none-any.whl (42 kB)
Collecting gast<=0.4.0,>=0.2.1
 Downloading gast-0.4.0-py3-none-any.whl (9.8 kB)
Requirement already satisfied: grpcio<2.0,>=1.24.3 in c:\users\poona\anaconda3\lib\site-packages (from tensorflow) (1.42.0)
Collecting tensorboard<2.11,>=2.10
 Downloading tensorboard-2.10.1-py3-none-any.whl (5.9 MB)
Requirement already satisfied: packaging in c:\users\poona\anaconda3\lib\site-packages (from tensorflow) (21.3)
Collecting google-pasta>=0.1.1
 Downloading google_pasta-0.2.0-py3-none-any.whl (57 kB)
Requirement already satisfied: protobuf<3.20,>=3.9.2 in c:\users\poona\anaconda3\lib\site-packages (from tensorflow) (3.19.1)
Requirement already satisfied: numpy>=1.20 in c:\users\poona\anaconda3\lib\site-packages (from tensorflow) (1.21.5)
Requirement already satisfied: h5py>=2.9.0 in c:\users\poona\anaconda3\lib\site-packages (from tensorflow) (3.6.0)
Collecting termcolor>=1.1.0
 Downloading termcolor-2.0.1-py3-none-any.whl (5.4 kB)
Collecting astunparse>=1.6.0
 Downloading astunparse-1.6.3-py2.py3-none-any.whl (12 kB)
Collecting tensorflow-io-gcs-filesystem>=0.23.1
 Downloading tensorflow_io_gcs_filesystem-0.27.0-cp39-cp39-win_amd64.whl (1.5 MB)
Requirement already satisfied: setuptools in c:\users\poona\anaconda3\lib\site-packages (from tensorflow) (61.2.0)
Collecting keras<2.11,>=2.10.0
 Downloading keras-2.10.0-py2.py3-none-any.whl (1.7 MB)
Collecting opt-einsum>=2.3.2
 Downloading opt_einsum-3.3.0-py3-none-any.whl (65 kB)
Requirement already satisfied: typing-extensions>=3.6.6 in c:\users\poona\anaconda3\lib\site-packages (from tensorflow) (4.1.1)
Collecting flatbuffers>=2.0
 Downloading flatbuffers-22.9.24-py2.py3-none-any.whl (26 kB)
Requirement already satisfied: six>=1.12.0 in c:\users\poona\anaconda3\lib\site-packages (from tensorflow) (1.16.0)
Requirement already satisfied: wheel<1.0,>=0.23.0 in c:\users\poona\anaconda3\lib\site-packages (from astunparse>=1.6.0->tensorflow) (0.37.1)
Requirement already satisfied: werkzeug>=1.0.1 in c:\users\poona\anaconda3\lib\site-packages (from tensorboard<2.11,>=2.10->tensorflow) (2.0.3)
Requirement already satisfied: requests<3,>=2.21.0 in c:\users\poona\anaconda3\lib\site-packages (from tensorboard<2.11,>=2.10->tensorflow) (2.27.1)
Collecting tensorboard-data-server<0.7.0,>=0.6.0
 Downloading tensorboard_data_server-0.6.1-py3-none-any.whl (2.4 kB)
Requirement already satisfied: markdown>=2.6.8 in c:\users\poona\anaconda3\lib\site-packages (from tensorboard<2.11,>=2.10->tensorflow) (3.3.4)
Collecting tensorboard-plugin-wit>=1.6.0
 Downloading tensorboard_plugin_wit-1.8.1-py3-none-any.whl (781 kB)
Collecting google-auth-oauthlib<0.5,>=0.4.1
 Downloading google_auth_oauthlib-0.4.6-py2.py3-none-any.whl (18 kB)
Requirement already satisfied: google-auth<3,>=1.6.3 in c:\users\poona\anaconda3\lib\site-packages (from tensorboard<2.11,>=2.10->tensorflow) (1.33.0)
Requirement already satisfied: cachetools<5.0,>=2.0.0 in c:\users\poona\anaconda3\lib\site-packages (from google-auth<3,>=1.6.3->tensorboard<2.11,>=2.10->tensorflow)

w) (4.2.2)

Requirement already satisfied: rsa<5,>=3.1.4 in c:\users\poona\anaconda3\lib\site-packages (from google-auth<3,>=1.6.3->tensorboard<2.11,>=2.10->tensorflow) (4.7.2)
Requirement already satisfied: pyasn1-modules>=0.2.1 in c:\users\poona\anaconda3\lib\site-packages (from google-auth<3,>=1.6.3->tensorboard<2.11,>=2.10->tensorflow) (0.2.8)

Collecting requests-oauthlib>=0.7.0

Downloading requests_oauthlib-1.3.1-py2.py3-none-any.whl (23 kB)

Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in c:\users\poona\anaconda3\lib\site-packages (from pyasn1-modules>=0.2.1->google-auth<3,>=1.6.3->tensorboard<2.11,>=2.10->tensorflow) (0.4.8)

Requirement already satisfied: idna<4,>=2.5 in c:\users\poona\anaconda3\lib\site-packages (from requests<3,>=2.21.0->tensorboard<2.11,>=2.10->tensorflow) (3.3)

Requirement already satisfied: charset-normalizer~2.0.0 in c:\users\poona\anaconda3\lib\site-packages (from requests<3,>=2.21.0->tensorboard<2.11,>=2.10->tensorflow) (2.0.4)

Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\users\poona\anaconda3\lib\site-packages (from requests<3,>=2.21.0->tensorboard<2.11,>=2.10->tensorflow) (1.26.9)

Requirement already satisfied: certifi>=2017.4.17 in c:\users\poona\anaconda3\lib\site-packages (from requests<3,>=2.21.0->tensorboard<2.11,>=2.10->tensorflow) (2021.10.8)

Collecting oauthlib>=3.0.0

Downloading oauthlib-3.2.1-py3-none-any.whl (151 kB)

Requirement already satisfied: pyparsing!=3.0.5,>=2.0.2 in c:\users\poona\anaconda3\lib\site-packages (from packaging->tensorflow) (3.0.4)

Installing collected packages: oauthlib, requests-oauthlib, tensorboard-plugin-wit, tensorboard-data-server, google-auth-oauthlib, absl-py, termcolor, tensorflow-io-gcs-filesystem, tensorflow-estimator, tensorboard, opt-einsum, libclang, keras-preprocessing, keras, google-pasta, gast, flatbuffers, astunparse, tensorflow

Successfully installed absl-py-1.3.0 astunparse-1.6.3 flatbuffers-22.9.24 gast-0.4.0 google-auth-oauthlib-0.4.6 google-pasta-0.2.0 keras-2.10.0 keras-preprocessing-1.1.2 libclang-14.0.6 oauthlib-3.2.1 opt-einsum-3.3.0 requests-oauthlib-1.3.1 tensorboard-2.10.1 tensorboard-data-server-0.6.1 tensorboard-plugin-wit-1.8.1 tensorflow-2.10.0 tensorflow-estimator-2.10.0 tensorflow-io-gcs-filesystem-0.27.0 termcolor-2.0.1

Note: you may need to restart the kernel to use updated packages.

In [3]: `import tensorflow as tf`

Print out Tensorflow version

In [5]: `print(tf.__version__)`

2.10.0

In [6]: `print(tf.reduce_sum(tf.random.normal([1000,1000])))`

tf.Tensor(-525.7693, shape=(), dtype=float32)

In [4]: `pip install keras`

Requirement already satisfied: keras in c:\users\poona\anaconda3\lib\site-packages (2.10.0)

Note: you may need to restart the kernel to use updated packages.

Keras Test Program

In [7]: `from tensorflow import keras`

In [8]: `from keras import datasets`

Loading MNIST Data

```
In [9]: (train_images,train_labels),(test_images,test_labels)=datasets.mnist.load_data()
```

Downloading data from <https://storage.googleapis.com/tensorflow/tf-keras-datasets/mnist.npz>

11490434/11490434 [=====] - 1s 0us/step

Check the dataset loaded

```
In [10]: train_images.shape,test_images.shape
```

```
Out[10]: ((60000, 28, 28), (10000, 28, 28))
```

Theano Test Program

```
In [13]: pip install theano
```

Collecting theano

Downloading Theano-1.0.5.tar.gz (2.8 MB)

Requirement already satisfied: numpy>=1.9.1 in c:\users\poona\anaconda3\lib\site-packages (from theano) (1.21.5)

Requirement already satisfied: scipy>=0.14 in c:\users\poona\anaconda3\lib\site-packages (from theano) (1.7.3)

Requirement already satisfied: six>=1.9.0 in c:\users\poona\anaconda3\lib\site-packages (from theano) (1.16.0)

Building wheels for collected packages: theano

Building wheel for theano (setup.py): started

Building wheel for theano (setup.py): finished with status 'done'

Created wheel for theano: filename=Theano-1.0.5-py3-none-any.whl size=2668124 sha256=f0ad9c0b7cec6801bf917d3b95dc59a556c2246a892c08c3dd6cdc915040798b

Stored in directory: c:\users\poona\appdata\local\pip\cache\wheels\12\d8\36\e9b7c617ca8be398dcc48621c539d0cb1d41ff04e4367fc235

Successfully built theano

Installing collected packages: theano

Successfully installed theano-1.0.5

Note: you may need to restart the kernel to use updated packages.

```
In [14]: import numpy
```

```
In [15]: import theano.tensor as T
```

WARNING (theano.tensor.blas): Using NumPy C-API based implementation for BLAS functions.

```
In [16]: from theano import function
```

Addition of two scalars

Declaring Two Variables

```
In [17]: x = T.dscalar('x')
```

```
In [18]: y = T.dscalar('y')
```

summing up the two numbers

```
In [24]: z = x + y
```

```
In [20]: f = function([x,y],z)
```

```
In [21]: f(5,7)
```

```
Out[21]: array(12.)
```

PyTorch Test Program

```
In [23]: pip install torch
```

Collecting torch

Downloading torch-1.12.1-cp39-cp39-win_amd64.whl (161.8 MB)

Requirement already satisfied: typing-extensions in c:\users\poona\anaconda3\lib\site-packages (from torch) (4.1.1)

Installing collected packages: torch

Successfully installed torch-1.12.1

Note: you may need to restart the kernel to use updated packages.

Importing torch

```
In [25]: import torch
```

```
In [26]: import torch.nn as nn
```

Print out PyTorch version

```
In [27]: print(torch.__version__)
```

1.12.1+cpu

```
In [ ]:
```