In [14]:
```python
#Assignment No: 1
#Title: Study of Deep learning Packages: Tensorflow, Keras, Theano and PyTorch.Document the distin
```

In [1]:
```python
pip install tensorflow
```
```
Requirement already satisfied: gast!=0.5.0,!=0.5.1,!=0.5.2,>=0.2.1 in c:\users\admin\appdata\ro
aming\python\python311\site-packages (from tensorflow-intel==2.14.0->tensorflow) (0.5.4)
Requirement already satisfied: google-pasta>=0.1.1 in c:\users\admin\appdata\roaming\python\pyt
hon311\site-packages (from tensorflow-intel==2.14.0->tensorflow) (0.2.0)
Requirement already satisfied: h5py>=2.9.0 in c:\programdata\anaconda3\lib\site-packages (from
tensorflow-intel==2.14.0->tensorflow) (3.9.0)
Requirement already satisfied: libclang>=13.0.0 in c:\users\admin\appdata\roaming\python\python
311\site-packages (from tensorflow-intel==2.14.0->tensorflow) (16.0.6)
Requirement already satisfied: ml-dtypes==0.2.0 in c:\users\admin\appdata\roaming\python\python
311\site-packages (from tensorflow-intel==2.14.0->tensorflow) (0.2.0)
Requirement already satisfied: numpy>=1.23.5 in c:\programdata\anaconda3\lib\site-packages (fro
m tensorflow-intel==2.14.0->tensorflow) (1.24.3)
Requirement already satisfied: opt-einsum>=2.3.2 in c:\users\admin\appdata\roaming\python\pytho
n311\site-packages (from tensorflow-intel==2.14.0->tensorflow) (3.3.0)
Requirement already satisfied: packaging in c:\programdata\anaconda3\lib\site-packages (from te
nsorflow-intel==2.14.0->tensorflow) (23.1)
Requirement already satisfied: protobuf!=4.21.0,!=4.21.1,!=4.21.2,!=4.21.3,!=4.21.4,!=4.21.5,<
5.0.0dev,>=3.20.3 in c:\users\admin\appdata\roaming\python\python311\site-packages (from tensor
flow-intel==2.14.0->tensorflow) (4.25.0)
Requirement already satisfied: setuptools in c:\programdata\anaconda3\lib\site-packages (from t
```

In [ ]:
```python
import numpy as np
import tensorflow as tf
```

In [6]:
```python
print(tf.__version__)
```
```
2.17.0
```

In [1]:
```python
from keras import datasets
(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 (http
s://storage.googleapis.com/tensorflow/tf-keras-datasets/mnist.npz)
11490434/11490434 [==============================] - 3s 0us/step
```

In [2]:
```python
train_images.shape
```
Out[2]: (60000, 28, 28)

In [3]:
```python
test_images.shape
```
Out[3]: (10000, 28, 28)

In [3]: `!pip3 install torch torchvision torchaudio --extra-index-url https://download.pytorch.org/whl/cu11`

```
Defaulting to user installation because normal site-packages is not writeable
Looking in indexes: https://pypi.org/simple, (https://pypi.org/simple,) https://download.pytorch.
org/whl/cu115 (https://download.pytorch.org/whl/cu115)
Requirement already satisfied: torch in c:\users\admin\appdata\roaming\python\python311\site-pack
ages (2.5.1)
Requirement already satisfied: torchvision in c:\users\admin\appdata\roaming\python\python311\sit
e-packages (0.20.1)
Requirement already satisfied: torchaudio in c:\users\admin\appdata\roaming\python\python311\site
-packages (2.5.1)
Requirement already satisfied: filelock in c:\programdata\anaconda3\lib\site-packages (from torc
h) (3.9.0)
Requirement already satisfied: typing-extensions>=4.8.0 in c:\users\admin\appdata\roaming\python
\python311\site-packages (from torch) (4.12.2)
Requirement already satisfied: networkx in c:\programdata\anaconda3\lib\site-packages (from torc
h) (3.1)
Requirement already satisfied: jinja2 in c:\programdata\anaconda3\lib\site-packages (from torch)
(3.1.2)
Requirement already satisfied: fsspec in c:\programdata\anaconda3\lib\site-packages (from torch)
(2023.4.0)
Requirement already satisfied: sympy==1.13.1 in c:\users\admin\appdata\roaming\python\python311\s
ite-packages (from torch) (1.13.1)
Requirement already satisfied: mpmath<1.4,>=1.1.0 in c:\programdata\anaconda3\lib\site-packages
(from sympy==1.13.1->torch) (1.3.0)
Requirement already satisfied: numpy in c:\programdata\anaconda3\lib\site-packages (from torchvis
ion) (1.24.3)
Requirement already satisfied: pillow!=8.3.*,>=5.3.0 in c:\programdata\anaconda3\lib\site-package
s (from torchvision) (9.4.0)
Requirement already satisfied: MarkupSafe>=2.0 in c:\programdata\anaconda3\lib\site-packages (fro
m jinja2->torch) (2.1.1)

  WARNING: The scripts convert-caffe2-to-onnx.exe, convert-onnx-to-caffe2.exe, torchfrtrace.exe a
nd torchrun.exe are installed in 'C:\Users\Admin\AppData\Roaming\Python\Python311\Scripts' which
is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-war
n-script-location.
```

```
Defaulting to user installation because normal site-packages is not writeable
Looking in indexes: https://pypi.org/simple, (https://pypi.org/simple,) https://download.pytorch.
org/whl/cu115 (https://download.pytorch.org/whl/cu115)
Collecting torch
  Obtaining dependency information for torch from https://files.pythonhosted.org/packages/0d/4a/e
51420d46cfc90562e85af2fee912237c662ab31140ab179e49bd69401d6/torch-2.5.1-cp311-cp311-win_amd64.wh
l.metadata (https://files.pythonhosted.org/packages/0d/4a/e51420d46cfc90562e85af2fee912237c662ab3
1140ab179e49bd69401d6/torch-2.5.1-cp311-cp311-win_amd64.whl.metadata)
  Using cached torch-2.5.1-cp311-cp311-win_amd64.whl.metadata (28 kB)
Collecting torchvision
  Obtaining dependency information for torchvision from https://files.pythonhosted.org/packages/6
9/55/ce836703ff77bb21582c3098d5311f8ddde7eadc7eab04be9561961f4725/torchvision-0.20.1-cp311-cp311-
win_amd64.whl.metadata (https://files.pythonhosted.org/packages/69/55/ce836703ff77bb21582c3098d53
11f8ddde7eadc7eab04be9561961f4725/torchvision-0.20.1-cp311-cp311-win_amd64.whl.metadata)
  Using cached torchvision-0.20.1-cp311-cp311-win_amd64.whl.metadata (6.2 kB)
Collecting torchaudio
  Obtaining dependency information for torchaudio from https://files.pythonhosted.org/packages/3
2/6a/019e426ab4af487167182a19e115fc03234fe28bc30e22cb0e1a9958f70e/torchaudio-2.5.1-cp311-cp311-wi
n_amd64.whl.metadata (https://files.pythonhosted.org/packages/32/6a/019e426ab4af487167182a19e115f
c03234fe28bc30e22cb0e1a9958f70e/torchaudio-2.5.1-cp311-cp311-win_amd64.whl.metadata)
  Using cached torchaudio-2.5.1-cp311-cp311-win_amd64.whl.metadata (6.5 kB)
Requirement already satisfied: filelock in c:\programdata\anaconda3\lib\site-packages (from torc
h) (3.9.0)
Requirement already satisfied: typing-extensions>=4.8.0 in c:\users\admin\appdata\roaming\python
\python311\site-packages (from torch) (4.12.2)
Requirement already satisfied: networkx in c:\programdata\anaconda3\lib\site-packages (from torc
h) (3.1)
Requirement already satisfied: jinja2 in c:\programdata\anaconda3\lib\site-packages (from torch)
(3.1.2)
Requirement already satisfied: fsspec in c:\programdata\anaconda3\lib\site-packages (from torch)
(2023.4.0)
Requirement already satisfied: sympy==1.13.1 in c:\users\admin\appdata\roaming\python\python311\s
ite-packages (from torch) (1.13.1)
Requirement already satisfied: mpmath<1.4,>=1.1.0 in c:\programdata\anaconda3\lib\site-packages
(from sympy==1.13.1->torch) (1.3.0)
Requirement already satisfied: numpy in c:\programdata\anaconda3\lib\site-packages (from torchvis
ion) (1.24.3)
Requirement already satisfied: pillow!=8.3.*,>=5.3.0 in c:\programdata\anaconda3\lib\site-package
s (from torchvision) (9.4.0)
Requirement already satisfied: MarkupSafe>=2.0 in c:\programdata\anaconda3\lib\site-packages (fro
m jinja2->torch) (2.1.1)
Using cached torch-2.5.1-cp311-cp311-win_amd64.whl (203.1 MB)
Using cached torchvision-0.20.1-cp311-cp311-win_amd64.whl (1.6 MB)
Using cached torchaudio-2.5.1-cp311-cp311-win_amd64.whl (2.4 MB)
Installing collected packages: torch, torchvision, torchaudio
Successfully installed torch-2.5.1 torchaudio-2.5.1 torchvision-0.20.1
```

In [4]:
```python
import torch
import torch.nn as nn
print(torch.__version__)
torch.cuda.is_available()
```

```
2.5.1+cpu
```

Out[4]: False

In [ ]: