BUILD PYTHON CODE :

import pandas as pd

import torch.nn as nn

class CNN(nn.Module):

def \_init\_(self, K):

super(CNN, self).\_init\_()

self.conv\_layers = nn.Sequential(

# conv1

nn.Conv2d(in\_channels=3, out\_channels=32,

kernel\_size=3, padding=1),

nn.ReLU(),

nn.BatchNorm2d(32),

nn.Conv2d(in\_channels=32, out\_channels=32,

kernel\_size=3, padding=1),

nn.ReLU(),

nn.BatchNorm2d(32),

nn.MaxPool2d(2),

# conv2

nn.Conv2d(in\_channels=32, out\_channels=64,

kernel\_size=3, padding=1),

nn.ReLU(),

nn.BatchNorm2d(64),

nn.Conv2d(in\_channels=64, out\_channels=64,

kernel\_size=3, padding=1),

nn.ReLU(),

nn.BatchNorm2d(64),

nn.MaxPool2d(2),

# conv3

nn.Conv2d(in\_channels=64, out\_channels=128,

kernel\_size=3, padding=1),

nn.ReLU(),

nn.BatchNorm2d(128),

nn.Conv2d(in\_channels=128, out\_channels=128,

kernel\_size=3, padding=1),

nn.ReLU(),

nn.BatchNorm2d(128),

nn.MaxPool2d(2),

# conv4

nn.Conv2d(in\_channels=128, out\_channels=256,

kernel\_size=3, padding=1),

nn.ReLU(),

nn.BatchNorm2d(256),

nn.Conv2d(in\_channels=256, out\_channels=256,

kernel\_size=3, padding=1),

nn.ReLU(),

nn.BatchNorm2d(256),

nn.MaxPool2d(2),

)

self.dense\_layers = nn.Sequential(

nn.Dropout(0.4),

nn.Linear(50176, 1024),

nn.ReLU(),

nn.Dropout(0.4),

nn.Linear(1024, K),

)

def forward(self, X):

out = self.conv\_layers(X)

# Flatten

out = out.view(-1, 50176)

# Fully connected

out = self.dense\_layers(out)

return out

idx\_to\_classes = {0: 'Apple\_\_\_Apple\_scab',

1: 'Apple\_\_\_Black\_rot',

2: 'Apple\_\_\_Cedar\_apple\_rust',

3: 'Apple\_\_\_healthy',

4: 'Background\_without\_leaves',

5: 'Blueberry\_\_\_healthy',

6: 'Cherry\_\_\_Powdery\_mildew',

7: 'Cherry\_\_\_healthy',

8: 'Corn\_\_\_Cercospora\_leaf\_spot Gray\_leaf\_spot',

9: 'Corn\_\_\_Common\_rust',

10: 'Corn\_\_\_Northern\_Leaf\_Blight',

11: 'Corn\_\_\_healthy',

12: 'Grape\_\_\_Black\_rot',

13: 'Grape\_\_Esca(Black\_Measles)',

14: 'Grape\_\_Leaf\_blight(Isariopsis\_Leaf\_Spot)',

15: 'Grape\_\_\_healthy',

16: 'Orange\_\_Haunglongbing(Citrus\_greening)',

17: 'Peach\_\_\_Bacterial\_spot',

18: 'Peach\_\_\_healthy',

19: 'Pepper,bell\_\_Bacterial\_spot',

20: 'Pepper,bell\_\_healthy',

21: 'Potato\_\_\_Early\_blight',

22: 'Potato\_\_\_Late\_blight',

23: 'Potato\_\_\_healthy',

24: 'Raspberry\_\_\_healthy',

25: 'Soybean\_\_\_healthy',

26: 'Squash\_\_\_Powdery\_mildew',

27: 'Strawberry\_\_\_Leaf\_scorch',

28: 'Strawberry\_\_\_healthy',

29: 'Tomato\_\_\_Bacterial\_spot',

30: 'Tomato\_\_\_Early\_blight',

31: 'Tomato\_\_\_Late\_blight',

32: 'Tomato\_\_\_Leaf\_Mold',

33: 'Tomato\_\_\_Septoria\_leaf\_spot',

34: 'Tomato\_\_\_Spider\_mites Two-spotted\_spider\_mite',

35: 'Tomato\_\_\_Target\_Spot',

36: 'Tomato\_\_\_Tomato\_Yellow\_Leaf\_Curl\_Virus',

37: 'Tomato\_\_\_Tomato\_mosaic\_virus',

38: 'Tomato\_\_\_healthy'}