

Assignment -3

Python Programming

Assignment Date	05 october 2022
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Student Roll Number	510119104014
Maximum Marks	2 Marks

PROBLEM STATEMENT: Build CNN Model for Classification of Flowers

```
ls
```

```
drive/ sample_data/
```

```
cd/content/drive/MyDrive/Colab Notebooks/DATASET
```

```
/content/drive/MyDrive/Colab Notebooks/DATASET
```

```
ls
```

```
flowers/ Flowers-Dataset.zip
```

```
pwd
```

```
{"type":"string"}
```

```
x_train=train_datagen.flow_from_directory(r"cd/content/drive/MyDrive/Colab  
Notebooks/DATASET/Training",target_size = (64,64), class_mode =  
"categorical",batch_size = 24)
```

```
Found 1248 images belonging to 5 classes
```

```
x_test=test_datagen.flow_from_directory(r"cd/content/drive/MyDrive/Colab  
Notebooks/DATASET/Testing",target_size = (64,64), class_mode =  
"categorical",batch_size = 24)
```

```
Found 347 images belonging to 5 classes
```

```
import os  
import zipfile
```

```
Zip_ref = zipfile.ZipFile("/content/drive/MyDrive/Colab  
Notebooks/DATASET/Flowers-Dataset.zip")  
Zip_ref.extractall("/tmp")  
Zip_ref.close()
```

```
import numpy as np  
import os  
import cv2  
import shutil  
import random as rn  
import matplotlib.pyplot as plt  
import tensorflow as tf
```

```
data_dir = "/tmp/flowers"
```

```
print(os.listdir("/tmp/flowers"))
```

```
['sunflower', 'daisy', 'tulip', 'rose', 'dandelion']
```

```
batch_size = 24  
img_size = img_height, img_width  
img_height = 64  
img_width = 64
```

```
from tensorflow.keras.models import Sequential  
from tensorflow.keras.layers import Convolution2D, MaxPooling2D, Flatten, Dense
```

```
model = Sequential()
```

```
model.add(Convolution2D(32, (3,3), activation = "relu", input_shape =  
(64, 64, 3)))
```

```
model.add(MaxPooling2D(pool_size = (2,2)))
```

```
model.add(Flatten())
```

```
model.add(Dense(300, activation='relu'))
```

```
model.add(Dense(300, activation='relu'))
```

```

model.add(Dense(4, activation="softmax"))

model.compile(loss="categorical_crossentropy", metrics=["accuracy"],
optimizer='adam')

model.save("flowers1")

```

```

from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
import numpy as np

```

```

model = load_model("/content/drive/MyDrive/Colab Notebooks/DATASET/flowers1")

img = image.load_img("/content/drive/MyDrive/Colab
Notebooks/DATASET/flowers/sunflower/2Q__(4).jpeg",target_size=(64,64))

```

```
img
```



```

img = [img1,img2,img3]

x = image.img_to_array(img)

x

array([[115., 149., 187.],
       [115., 149., 187.],
       [115., 149., 187.],
       ...,
       [113., 145., 184.],
       [112., 144., 183.],
       [125., 159., 197.]],

      [[117., 151., 189.],
       [117., 151., 189.],
       [117., 151., 189.],
       ...,
       [115., 147., 186.],
       [113., 145., 184.],
       [108., 145., 187.]])

```

```

[[119., 153., 191.],
 [119., 153., 191.],
 [119., 153., 191.],
 ...,
 [116., 148., 187.],
 [114., 146., 185.],
 [108., 147., 190.]],

...,

[[216., 151., 69.],
 [210., 145., 65.],
 [142., 76., 0.],
 ...,
 [133., 107., 92.],
 [144., 108., 84.],
 [141., 89., 42.]],

[[193., 130., 53.],
 [226., 160., 86.],
 [212., 149., 78.],
 ...,
 [134., 100., 90.],
 [121., 88., 79.],
 [146., 112., 85.]],

[[138., 84., 24.],
 [114., 59., 2.],
 [146., 91., 35.],
 ...,
 [149., 117., 106.],
 [119., 91., 80.],
 [135., 116., 102.]]], dtype=float32)

```

```
x.ndim
```

```
3
```

```
x = np.expand_dims(x,axis = 0)
```

```
x.ndim
```

```
4
```

```
pred = model.predict(x)
```

```
pred
```

```
array([[0., 0., 0., 1., 0.]], dtype=float32)
```

```
labels = ["daisy","dandelion",rose,"sunflower","tulip"]
```

```
np.argmax(pred)
```

```
2
```

```
labels[np.argmax(pred)]
```

```
"sunflower"
```