Assignment -3
Python Programming

Assignment Date	05 october 2022
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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
```

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

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

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

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

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

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

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

```python
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'))
```

```python
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
```



```python
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)
```

```python
x.ndim
```

3

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

```python
x.ndim
```

4

```python
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"
```