## Assignment 3

Assignment Date	6 October 2022
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Maximum Marks	2 Marks

### 1. Download the Dataset:

```
free google.colab import drive
drive.mount('/content/drive')

Mounted at /content/drive

In []:

free google.colab import files
uploaded = files.upload()

In []:

Is

drive/ sample_data/

In []:

cd /content/drive/MyDrive/New folder
/content/drive/MyDrive/New folder

In []:

Is

Flowers-Dataset.zip

In []:

In []:

In []:

In []:

In []:

In []:

Archive: Flowers-Dataset.zip

Archive: Flowers-Dataset.zip

inflating: flowers/daisy/100808576_f52e8ee070_n.jpg
inflating: flowers/daisy/100808576_f52e8ee070_n.jpg
inflating: flowers/daisy/100808576_e52e8ee070_n.jpg
inflating: flowers/daisy/100808576_e52e8ee070_n.jpg
inflating: flowers/daisy/100808578_e52e8ee070_n.jpg
inflating: flowers/daisy/100808578_e52e8ee070_n.jpg
inflating: flowers/daisy/100808578_e52e8ee070_n.jpg
inflating: flowers/daisy/100808578_e52e8ee0.jpg
inflating: flowers/daisy/100808578_e52e8ee0.jpg
inflating: flowers/daisy/100808578_e52e8ee0.jpg
inflating: flowers/daisy/100808578_e52e9ee077_e.jpg
inflating: flowers/daisy/100808758_e56e50e0.ppg
inflating: flowers/daisy/100808758_e56e50e0.ppg
inflating: flowers/daisy/100808758_e58e50e0.ppg
inflating: flowers/daisy/100808578_e58e50e0.ppg
inflating: flowers/daisy/100808578_e58e50e0.ppg
inflating: flowers/daisy/100808578_e58e50e0.ppg
inflating: flowers/daisy/1008085806_ecc2e35352_ppg
inflating: flowers/daisy
```

### 2. Image Augmentation

### Data Augmentation

[ ] from tensorflow.keras.preprocessing.image import ImageDataGenerator

### 3. Create Model

```
In []: from tensorflow.keras.preprocessing.image import ImageDataGenerator

In []: train_datagen = ImageDataGenerator(rescale=1./255,zoom_range = 0.2,horizontal_flip =True,vertical_flip =False)

In []: test_datagen = ImageDataGenerator(rescale=1./255)

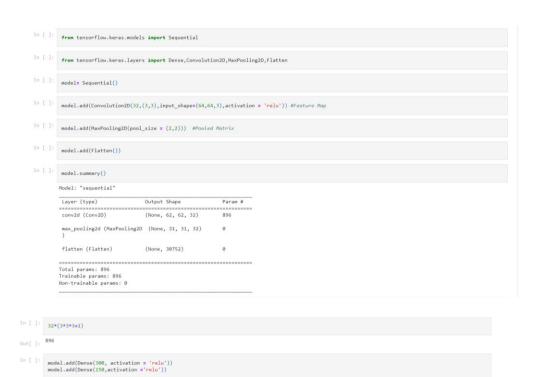
In []: x_train = train = train datagen.flow_from_directory(r*/content/drive/MyOrive/New folder/flowers/daisy*,target_size = (10,10),class_mode ='categorical' found 0 images belonging to 0 classes.

In []: x_test = test_datagen.flow_from_directory(r*/content/drive/MyOrive/New folder/flowers/rose*,target_size = (1,5),class_mode ='categorical',batch_size=1 found 0 images belonging to 0 classes.

In []: x_train.class_indices

Out[]: O
```

# 4. Add Layers (Convolution, Max Pooling, Flatten, Dense- (Hidden Layers), Output)



## 5. Compile The Model

In [ ]: model.add(Dense(4,activation='softmax'))

#### 6. Fit The Model

Fit the model.

```
[ ] model.fit_generator(xtrain,
       r(xtrain,

steps_per_epoch=len(xtrain),

epochs=20,

validation_data=xtest,

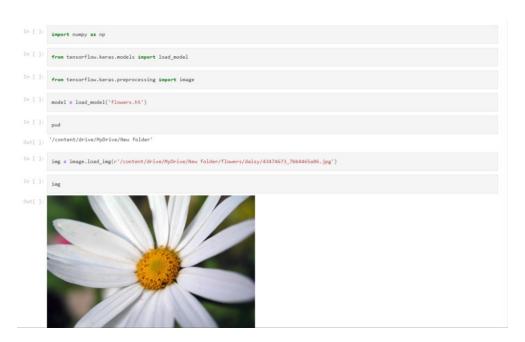
validation_steps=len(xtest))
 C:\Users\mm\AppData\Local\Temp\ipykernel_6696\312721451.py:1: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future version. Please use `Model.fit`, which so model.fit_generator(xtrain,
 Epoch 1/20
44/44 [====
Epoch 2/28
44/44 [====
Epoch 3/28
44/44 [====
Epoch 4/28
44/44 [====
Epoch 6/28
44/44 [====
Epoch 6/28
44/44 [====
Epoch 9/28
44/44 [====
Epoch 19/26
44/44 [====
Epoch 11/28
      Epoch 12/20
44/44 [====
       Epoch 13/20
44/44 [====
```

### 7. Save The Model

```
In []: model.save('flowers.h5')

In []: ls flowers/ Flowers-Dataset.zip flowers.h5
```

### 8. Test The Model



```
In [ ]: img = image.load_img(r'/content/drive/MyDrive/New folder/flowers/daisy/43474673_7bb4465a86.jpg',target_size=(64,64))
In [ ]: img
In [ ]: x=image.img_to_array(img)
In []: x
[[ 66., 83., 64.], [ 50., 73., 47.], [ 43., 61., 37.], ..., [ 84., 83., 65.], [ 70., 78., 21.], [ 55., 62., 18.]],
                  [[ 66., 85., 53.],
[ 56., 82., 47.],
[ 49., 74., 44.],
...,
[ 91., 87., 13.],
[ 77., 83., 11.],
[ 76., 80., 19.]],
                    ..,
[ 24., 48., 29.],
[ 20., 36., 25.],
[ 18., 34., 24.]]], dtype=float32)
 In [ ]: x.shape
 Out[ ]: (64, 64, 3)
 In [ ]: x= np.expand_dims(x,axis=0)
 In [ ]: y = np.argmax(model.predict(x), axis=1)
 In [ ]: y
 Out[ ]: array([1])
 In [ ]: x_train.class_indices
 Out[]: {}
 In [ ]:
   index = ['daisy','dandelion','rose','sunflower','tulip']
 In [ ]: index[y[0]]
 Out[ ]: 'dandelion'
 In [ ]: index[3]
 Out[]: 'sunflower'
```