

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

Mounted at /content/drive

```
ls
```

```
drive/ sample_data/
```

```
cd /content/drive/MyDrive/tanmoy_IBM_nalaiyathiran/flowers
```

```
/content/drive/MyDrive/tanmoy_IBM_nalaiyathiran/flowers
```

```
pwd
```

```
'/content/drive/MyDrive/tanmoy_IBM_nalaiyathiran/flowers'
```

```
!unzip flowers.zip
```

```
📁 Archive: flowers.zip
  inflating: flowers/Achillea.jpg
  inflating: flowers/African-Daisy.jpg
  inflating: flowers/American-Lotus.jpg
  inflating: flowers/filigran.jpg
  inflating: flowers/rose.jpg
```

Image Augmentation

```
from tensorflow.keras.preprocessing.image import ImageDataGenerator
```

```
train_datagen = ImageDataGenerator(rescale = 1./255, zoom_range= 0.3, horizontal_flip=True, v
```

```
test_datagen = ImageDataGenerator(rescale = 1./255)
```

```
x_train = train_datagen.flow_from_directory(r"/content/drive/MyDrive/tanmoy_IBM_nalaiyathi
```

```
Found 5 images belonging to 1 classes.
```

```
x_test = test_datagen.flow_from_directory(r"/content/drive/MyDrive/tanmoy_IBM_nalaiyathira
```

```
Found 5 images belonging to 1 classes.
```

```
x_train.class_indices
```

```
{'flowers': 0}
```

```

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

model = Sequential()

model.add(Convolution2D(32,(3,3),activation="relu",strides=(1, 1),input_shape =(64,64,3)))

model.add(MaxPooling2D(strides=(1, 1)))

model.add(Flatten())

model.summary()

```

Model: "sequential"

Layer (type)	Output Shape	Param #
=====		
conv2d (Conv2D)	(None, 62, 62, 32)	896
max_pooling2d (MaxPooling2D)	(None, 61, 61, 32)	0
flatten (Flatten)	(None, 119072)	0
=====		
Total params: 896		
Trainable params: 896		
Non-trainable params: 0		
=====		

```

model.add(Dense(300,activation="relu"))
model.add(Dense(300,activation="relu"))

model.add(Dense(5,activation="softmax"))

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

len(x_train)

1

model.fit(x_train,epochs = 10,steps_per_epoch=len(x_train),validation_data=x_test,validation_steps=1)

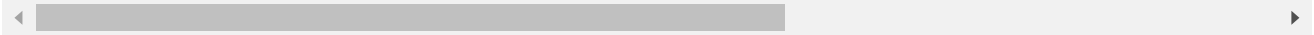
```

Epoch 1/10
1/1 [=====] - 2s 2s/step - loss: 8.0674 - accuracy: 0.0000e+00
Epoch 2/10
1/1 [=====] - 1s 820ms/step - loss: 31.5680 - accuracy: 1.0000e+00
Epoch 3/10
1/1 [=====] - 1s 837ms/step - loss: 38.8966 - accuracy: 0.0000e+00
Epoch 4/10
1/1 [=====] - 1s 865ms/step - loss: 52.5986 - accuracy: 0.0000e+00

```

Epoch 5/10
1/1 [=====] - 1s 825ms/step - loss: 69.2919 - accuracy: 0.00
Epoch 6/10
1/1 [=====] - 1s 918ms/step - loss: 91.7591 - accuracy: 0.00
Epoch 7/10
1/1 [=====] - 1s 827ms/step - loss: 123.6914 - accuracy: 0.00
Epoch 8/10
1/1 [=====] - 1s 834ms/step - loss: 135.3233 - accuracy: 0.00
Epoch 9/10
1/1 [=====] - 1s 813ms/step - loss: 179.7045 - accuracy: 0.00
Epoch 10/10
1/1 [=====] - 1s 843ms/step - loss: 207.5992 - accuracy: 0.00
<keras.callbacks.History at 0x7f58029383d0>

```



```
model.save("flower.h5")
```

```

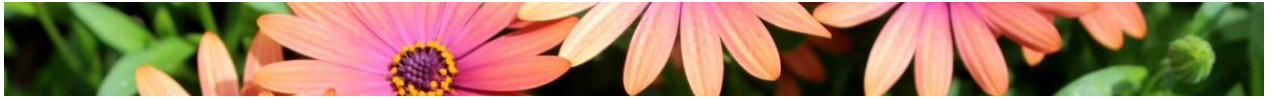
import numpy as np
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image

```

```
model = load_model("flower.h5")
```

```
img = image.load_img(r"/content/drive/MyDrive/tanmoy_IBM_nalaisyathiran/flowers/African-Dai
```

```
img
```



```
img = image.load_img(r"/content/drive/MyDrive/tanmoy_IBM_nalaiyathiran/flowers/African-Dai
```



```
img
```



```
x = image.img_to_array(img)
```



```
x
```

```
array([[108., 163., 46.],
       [ 93., 141., 23.],
       [ 35., 69., 9.],
       ...,
       [130., 188., 138.],
       [ 56., 93., 39.],
       [ 52., 90., 41.]],

      [[ 23., 41., 15.],
       [ 15., 41., 0.],
       [ 30., 63., 10.],
       ...,
       [ 57., 113., 52.],
       [101., 149., 87.],
       [ 60., 98., 47.]],

      [[ 2., 0., 3.],
       [ 2., 0., 1.],
       [ 68., 103., 23.],
       ...,
       [ 43., 76., 29.],
       [ 53., 92., 39.],
       [ 61., 100., 45.]],

      ...,

      [[ 23., 31., 18.],
       [253., 189., 162.],
       [255., 172., 138.],
       ...,
       [ 38., 65., 22.],
       [ 58., 97., 53.],
       [ 15., 52., 0.]],

      [[ 47., 45., 24.],
       [124., 59., 41.],
       [254., 144., 129.],
       ...,
       [ 35., 66., 22.],
       [ 23., 59., 13.]])
```

```
[ 32.,  68.,  22.]],

[[255., 168., 140.],
 [209.,  94.,  65.],
 [248., 166., 152.],
 ...,
 [ 19.,  44.,   5.],
 [ 14.,  39.,   0.],
 [ 20.,  48.,  10.]]], dtype=float32)
```

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

```
x
```

```
array([[[[108., 163.,  46.],
 [ 93., 141.,  23.],
 [ 35.,  69.,   9.],
 ...,
 [130., 188., 138.],
 [ 56.,  93.,  39.],
 [ 52.,  90.,  41.]],

 [[ 23.,  41.,  15.],
 [ 15.,  41.,   0.],
 [ 30.,  63.,  10.],
 ...,
 [ 57., 113.,  52.],
 [101., 149.,  87.],
 [ 60.,  98.,  47.]],

 [[  2.,   0.,   3.],
 [  2.,   0.,   1.],
 [ 68., 103.,  23.],
 ...,
 [ 43.,  76.,  29.],
 [ 53.,  92.,  39.],
 [ 61., 100.,  45.]],

 ...,

 [[ 23.,  31.,  18.],
 [253., 189., 162.],
 [255., 172., 138.],
 ...,
 [ 38.,  65.,  22.],
 [ 58.,  97.,  53.],
 [ 15.,  52.,   0.]],

 [[ 47.,  45.,  24.],
 [124.,  59.,  41.],
 [254., 144., 129.],
 ...,
 [ 35.,  66.,  22.],
 [ 23.,  59.,  13.],
 [ 32.,  68.,  22.]],

 [[255., 168., 140.],
 [209.,  94.,  65.],
```

```
[248., 166., 152.],  
...,  
[ 19., 44., 5.],  
[ 14., 39., 0.],  
[ 20., 48., 10.]]]], dtype=float32)
```

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

```
1/1 [=====] - 0s 126ms/step
```

```
pred
```

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

```
x_test.class_indices
```

```
{'flowers': 0}
```

```
index = [ "", "flowers"]
```

```
img = image.load_img(r"/content/drive/MyDrive/tanmoy_IBM_nalaiyathiran/flowers/filigran.jp
```

```
img
```



```
img = image.load_img(r"/content/drive/MyDrive/tanmoy_IBM_nalaiyathiran/flowers/Achillea.jp
```

```
img
```

