

NAME: Siddharth V

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

Mounted at /content/drive

```
ls
```

```
drive/ sample_data/
```

```
cd /content/drive/MyDrive/NalaiyaThiranIBM_Siddharth/images/flowers
```

```
/content/drive/MyDrive/NalaiyaThiranIBM_Siddharth/images/flowers
```

```
pwd
```

```
'/content/drive/MyDrive/NalaiyaThiranIBM_Siddharth/images/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/NalaiyaThiranIBM_Sidd
```

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

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

```
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,validati
```

```
Epoch 1/10
```

```
1/1 [=====] - 2s 2s/step - loss: 8.0596 - accuracy: 0.4000 -
```

```
Epoch 2/10
```

```
1/1 [=====] - 1s 792ms/step - loss: 23.8550 - accuracy: 0.0000 -
```

```
Epoch 3/10
```

```

1/1 [=====] - 1s 733ms/step - loss: 59.2985 - accuracy: 1.00
Epoch 4/10
1/1 [=====] - 1s 843ms/step - loss: 75.4018 - accuracy: 0.00
Epoch 5/10
1/1 [=====] - 1s 739ms/step - loss: 56.6012 - accuracy: 0.20
Epoch 6/10
1/1 [=====] - 1s 823ms/step - loss: 67.8938 - accuracy: 0.80
Epoch 7/10
1/1 [=====] - 1s 786ms/step - loss: 67.1419 - accuracy: 1.00
Epoch 8/10
1/1 [=====] - 1s 864ms/step - loss: 60.8169 - accuracy: 0.40
Epoch 9/10
1/1 [=====] - 1s 747ms/step - loss: 90.4308 - accuracy: 0.00
Epoch 10/10
1/1 [=====] - 1s 771ms/step - loss: 67.3913 - accuracy: 0.60
<keras.callbacks.History at 0x7f8a9b92ba10>

```

```
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/NalaiyaThiranIBM_Siddharth/images/flowers/ro
```

```
img
```



```
img = image.load_img(r"/content/drive/MyDrive/NalaiyaThiranIBM_Siddharth/images/flowers/Am
```

```
img
```



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

x

```

array([[ 96., 100., 67.],
       [107., 100., 81.],
       [101., 105., 90.],
       ...,
       [ 12.,  8.,  5.],
       [ 12.,  8.,  5.],
       [ 12.,  8.,  5.]],

      [[104., 101., 70.],
       [111., 105., 79.],
       [104., 109., 87.],
       ...,
       [ 12.,  8.,  5.],
       [ 14., 10.,  7.],
       [ 14., 10.,  7.]],

      [[102., 99., 68.],
       [105., 98., 69.],
       [100., 105., 83.],
       ...,
       [ 14., 11.,  6.],
       [ 16., 13.,  8.],
       [ 14., 11.,  6.]],

      ...,

      [[103., 150., 58.],
       [119., 151., 50.],
       [116., 152., 56.],
       ...,
       [ 37., 42., 45.],
       [ 37., 41., 52.],
       [ 31., 35., 38.]],

      [[104., 149., 64.],
       [117., 154., 58.],
       [118., 154., 58.],
       ...,
       [ 39., 43., 52.],
       [ 42., 51., 68.],
       [ 42., 45., 54.]],

      [[106., 150., 73.],
       [115., 153., 70.],
       [116., 154., 67.],
       ...,
       [ 55., 58., 75.],
       [ 55., 58., 75.],
       [ 43., 46., 61.]])], dtype=float32)

```

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

x

```

array([[[[ 96., 100., 67.],
          [107., 100., 81.],

```

```

[101., 105., 90.],
...,
[ 12.,  8.,  5.],
[ 12.,  8.,  5.],
[ 12.,  8.,  5.]],

[[104., 101., 70.],
[111., 105., 79.],
[104., 109., 87.],
...,
[ 12.,  8.,  5.],
[ 14., 10.,  7.],
[ 14., 10.,  7.]],

[[102., 99., 68.],
[105., 98., 69.],
[100., 105., 83.],
...,
[ 14., 11.,  6.],
[ 16., 13.,  8.],
[ 14., 11.,  6.]],

...,

[[103., 150., 58.],
[119., 151., 50.],
[116., 152., 56.],
...,
[ 37., 42., 45.],
[ 37., 41., 52.],
[ 31., 35., 38.]],

[[104., 149., 64.],
[117., 154., 58.],
[118., 154., 58.],
...,
[ 39., 43., 52.],
[ 42., 51., 68.],
[ 42., 45., 54.]],

[[106., 150., 73.],
[115., 153., 70.],
[116., 154., 67.],
...,
[ 55., 58., 75.],
[ 55., 58., 75.],
[ 43., 46., 61.]]], dtype=float32)

```

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

```
pred
```

```
x_test.class_indices
```

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

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

```
img = image.load_img(r"/content/drive/MyDrive/NalaiyaThiranIBM_Siddharth/images/flowers/fi
```

```
img
```



```
img = image.load_img(r"/content/drive/MyDrive/NalaiyaThiranIBM_Siddharth/images/flowers/Ac
```

```
img
```



[Colab paid products](#) - [Cancel contracts here](#)

✓ 0s completed at 12:36 PM

