

ASSIGNMENT 3, NAME: MITHOON N S, ROLL NUMBER:
110819104301

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

Mounted at /content/drive

```
ls
```

```
drive/ sample_data/
```

```
cd /content/drive/MyDrive/IBM-NALAIYATHIRAN/images
```

```
/content/drive/MyDrive/IBM-NALAIYATHIRAN/images
```

```
pwd
```

```
'/content/drive/MyDrive/IBM-NALAIYATHIRAN/images'
```

```
!unzip flowers.zip
```

```
Archive: flowers.zip
  inflating: images/f1.jpg
  inflating: images/f2.jpg
  inflating: images/f3.jpg
  inflating: images/f4.jpg
  inflating: images/f5.jpg
```

Image Augmentation

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

```
train_datagen = ImageDataGenerator(rescale = 1./255, zoo
```

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

```
x_train = train_datagen.flow_from_directory(r"/content/
```

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

```
x_test = test_datagen.flow_from_directory(r"/content/dr
```

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

f1.jpg ×

...



```
x_train.class_indices
```

```
{'images': 0}
```

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

```
model = Sequential()
```

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

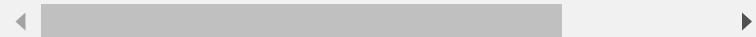
```
model.add(MaxPooling2D(strides=(1, 1)))
```

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

```
model.summary()
```

```
Model: "sequential"
```

Layer (type)	Output Shape
=====	
conv2d (Conv2D)	(None, 62, 62, 32)
max_pooling2d (MaxPooling2D)	(None, 61, 61, 32)
flatten (Flatten)	(None, 119072)
=====	
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",optimiz
```

```
len(x_train)
```

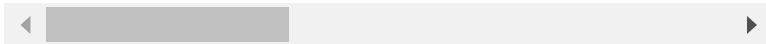
```
1
```

```
model.fit(x_train,epochs = 10,steps_per_epoch=len(x_tra
```

```
Epoch 1/10
```

```
1/1 [=====] - 2s 2s/step
```

```
Epoch 2/10
1/1 [=====] - 1s 877ms/st
Epoch 3/10
1/1 [=====] - 1s 671ms/st
Epoch 4/10
1/1 [=====] - 1s 713ms/st
Epoch 5/10
1/1 [=====] - 1s 717ms/st
Epoch 6/10
1/1 [=====] - 1s 714ms/st
Epoch 7/10
1/1 [=====] - 1s 792ms/st
Epoch 8/10
1/1 [=====] - 1s 691ms/st
Epoch 9/10
1/1 [=====] - 1s 805ms/st
Epoch 10/10
1/1 [=====] - 1s 690ms/st
<keras.callbacks.History at 0x7f4dadb00510>
```



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

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

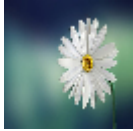
```
model = load_model("flower.h5")
```

```
img = image.load_img(r"/content/drive/MyDrive/IBM-NALAI
```

```
img
```

```
img = image.load_img(r"/content/drive/MyDrive/IBM-NALAI
```

```
img
```



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

```
x
```

```
array([[20., 25., 55.],
       [20., 25., 55.],
       [19., 24., 56.],
       ...,
       [17., 24., 52.],
       [18., 23., 53.],
       [17., 22., 52.]],

      [[20., 27., 56.],
       [20., 27., 56.],
       [21., 26., 56.],
       ...,
       [20., 27., 55.],
       [19., 26., 54.],
       [19., 26., 54.]],

      [[21., 27., 59.],
       [22., 28., 60.],
       [20., 27., 56.],
       ...,
       [20., 30., 57.],
       [23., 30., 58.],
       [22., 29., 57.]],

      ...,

      [[39., 72., 91.],
       [41., 74., 91.],
       [43., 76., 91.],
       ...,
       [16., 28., 52.],
       [16., 28., 54.],
       [16., 28., 54.]],

      [[39., 70., 88.],
       [41., 72., 90.],
       [41., 74., 89.],
       ...,
       [16., 28., 54.],
       [16., 28., 54.]])
```

```

        [15., 27., 53.]],

[[39., 70., 88.],
 [39., 70., 88.],
 [40., 73., 90.],
 ...,
 [17., 27., 54.],
 [17., 27., 54.],
 [17., 27., 54.] ]], dtype=float32)

```

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

```
x
```

```

array([[[[20., 25., 55.],
         [20., 25., 55.],
         [19., 24., 56.],
         ...,
         [17., 24., 52.],
         [18., 23., 53.],
         [17., 22., 52.]],

        [[20., 27., 56.],
         [20., 27., 56.],
         [21., 26., 56.],
         ...,
         [20., 27., 55.],
         [19., 26., 54.],
         [19., 26., 54.]],

        [[21., 27., 59.],
         [22., 28., 60.],
         [20., 27., 56.],
         ...,
         [20., 30., 57.],
         [23., 30., 58.],
         [22., 29., 57.]],

        ...,

        [[39., 72., 91.],
         [41., 74., 91.],
         [43., 76., 91.],
         ...,
         [16., 28., 52.],
         [16., 28., 54.],
         [16., 28., 54.]],

        [[39., 70., 88.],
         [41., 72., 90.],
         [41., 74., 89.],
         ...,
         [16., 28., 54.],
         [16., 28., 54.],
         [15., 27., 53.]],

        [[39., 70., 88.],
         [39., 70., 88.],

```

```
[40., 73., 90.],
...,
[17., 27., 54.],
[17., 27., 54.],
[17., 27., 54.] ]], dtype=float32)
```

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

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



```
pred
```

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

```
x_test.class_indices
```

```
{'images': 0}
```

```
index = ["","images"]
```

```
img = image.load_img(r"/content/drive/MyDrive/IBM-NALAI
```

```
img
```



```
img = image.load_img(r"/content/drive/MyDrive/IBM-NALAI
```

```
img
```



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