

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

ls

cd /content/drive/MyDrive/CNN

pwd

##unzipping the zip file

!unzip Flowers-Dataset.zip

## Image Augmentation

from tensorflow.keras.preprocessing.image import ImageDataGenerator

train_datagen=ImageDataGenerator(rescale=1./255,zoom_range=0.2,horizontal_flip=True,vertical_f
lip=True)

test_datagen=ImageDataGenerator(rescale=1./255)

x_train=train_datagen.flow_from_directory(r"/content/drive/MyDrive/CNN/flowers",target_size=(6
4,64),class_mode="categorical",batch_size=24)

x_test=test_datagen.flow_from_directory(r"/content/drive/MyDrive/CNN/flowers",target_size=(64,
64),class_mode="categorical",batch_size=24)

x_train.class_indices

## Creating The Model

from tensorflow.keras.models import Sequential

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

model=Sequential()

## Adding The Layers

##Adding Convolution2D Layer

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

##Adding MaxPooling2D Layer

model.add(MaxPooling2D(pool_size=(2,2)))

##Adding Flatten Layer

model.add(Flatten())
```

```
##Adding Dense-(Hidden Layers)
```

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

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

```
##Adding Output Layer
```

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

```
##To see the added layers
```

```
model.summary()
```

```
## Compiling The Model
```

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

```
## Fitting The Model
```

```
len(x_train)
```

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

```
## Saving The Model
```

```
model.save('flowers.h5')
```

```
## Testing The Model
```

```
import numpy as np
```

```
from tensorflow.keras.models import load_model
```

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

```
model=load_model('flowers.h5')
```

```
img=image.load_img(r"/content/drive/MyDrive/CNN/flowers/rose/537207677_f96a0507bb.jpg")
```

```
img
```

```
img=image.load_img(r"/content/drive/MyDrive/CNN/flowers/rose/537207677_f96a0507bb.jpg",target_size=(64,64))
```

```
img
```

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

```
x
```

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

```
x
```

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

```
pred
```

```
x_test.class_indices
```

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

```
index[np.argmax(pred)]
```