Assignment - 3

Assignment Date	03.10.2022
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Maximum Marks	2 Marks

Question-1

Download the Dataset

#Importing Packages

```
In [50]: from tensorflow.keras.models import Sequential
         from tensorflow.keras.layers import Convolution2D,MaxPooling2D,Flatten,Dense
         from tensorflow.keras.preprocessing.image import ImageDataGenerator as idm
         import numpy as np
         import warnings
         #Supressing warnings
         warnings.filterwarnings('ignore')
```

Question-2

Image Augmentation

Solution:

Creating augmentation on training variable

train_flowers=idm(rescale=1./255,zoom_range=0.2,horizontal_flip=True)

Passing training data to train variable

Xtrain = train_flowers.flow_from_directory('/content/drive/MyDrive/IBM/Flowers-Dataset',target_size=(76,76),class_mode='categorical',batch_size=100)

Creating augmentation on testing variable

test_flowers=idm(rescale=1./255)

Passing testing data to test variable

Xtest = test_flowers.flow_from_directory('/content/drive/MyDrive/IBM/Flower_Training',target_size=(76,76),class_mode='categorical',batch_size=100)

Screenshot:

Question-3

Create Model

Solution:

```
# Creating augmentation on training variable
train_flowers=idm(rescale=1./255,zoom_range=0.2,hor
izontal_flip=True)

# Passing training data to train variable
Xtrain =
train_flowers.flow_from_directory('/content/drive/MyDrive/I
BM/Flowers-
Dataset',target_size=(76,76),class_mode='categorical',batch_
size=100)

# Creating augmentation on testing variable
test_flowers=idm(rescale=1./255)

# Passing testing data to test variable
Xtest =
test_flowers.flow_from_directory('/content/drive/MyDrive/I
BM/Flower_Training',target_size=(76,76),class_mode='catego
rical',batch_size=100)
```

Screenshot:

Question-4

Compile The Model

Solution:

```
Flower_model.compile(optimizer='adam',loss='categori
cal_crossentropy',metrics=['accuracy'])
```

Screenshot:

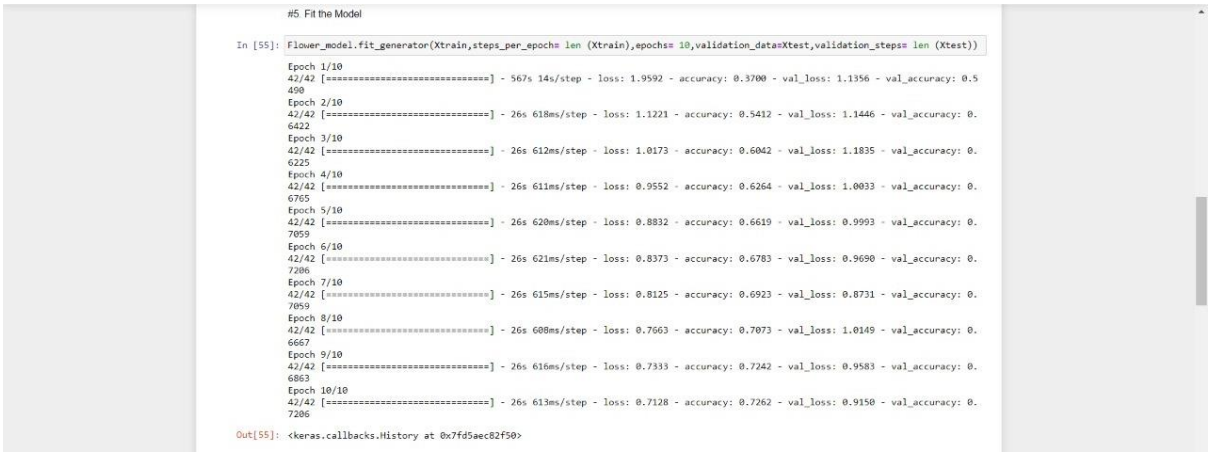
Question-5

Fit The Model

Solution:

```
Flower_model.fit_generator(Xtrain,steps_per_epoch=
len (Xtrain),epochs=
10,validation_data=Xtest,validation_steps= len (Xtest))
```

Screenshot:



Question-6

Save The Model

Solution:

Flower_model.save('Flower.h5')

Screenshot:

Question-7

Test The Model

Solution:

```
test_img=image.load_img('/content/drive/MyDrive/IBM/Flowers-Dataset/sunflower/200557977_bf24d9550b.jpg',target_size=(76,76))
test_img

x=image.img_to_array(test_img)
x=np.expand_dims(x,axis=0)
predicted=np.argmax(Flower_model.predict(x))
Prediction_category=['daisy','dandelion','rose','sunflower','tulip']
Prediction_category[predicted]

test_img1=image.load_img('/content/drive/MyDrive/IBM/Flowers-Dataset/daisy/1140299375_3aa7024466.jpg',target_size=(76,76))
test_img1

x=image.img_to_array(test_img1)
x=np.expand_dims(x,axis=0)
predicted=np.argmax(Flower_model.predict(x))
```

Prediction_category[predicted]

```
test_img2=image.load_img('/content/drive/MyDrive/IBM/Flowers-
Dataset/rose/7251352826_69b62cba2c_m.jpg',target_size=(76,76))
```

test_img2

```
x=image.img_to_array(test_img2)
x=np.expand_dims(x,axis=0)
predicted=np.argmax(Flower_model.predict(x))
```

Prediction_category[predicted]

Screenshot: