

### **ASSIGNMENT – 3**

Assignment Date	11 October 2022
Student Name	Bhavya L
Student Roll Number	1115191060013
Maximum Marks	2 Marks

#### **QUESTION – 1:**

##### **DOWNLOAD THE DATASET**

```
!unzip 'M:\software\AI_TRAINING_IBM\Flowers-Dataset.zip'
```

unzip: cannot find or open M:\software\AI\_TRAINING\_IBM\Flowers-Dataset.zip, M:\software\AI\_TRAINING\_IBM\Flowers-Dataset.zip.zip or M:\software\AI\_TRAINING\_IBM\Flowers-Dataset.zi

#### **QUESTION – 2:**

##### **DATA/ IMAGE AUGMENTATION**

```
[3]: from tensorflow.keras.preprocessing.image import ImageDataGenerator
```

#### **QUESTION – 3:**

##### **TRAINING & TESTING**

```
train_datagen=ImageDataGenerator(rescale=1./255, zoom_range=0.2, horizontal_flip=True)
test_datagen=ImageDataGenerator(rescale=1./255)
```

```
xtrain=train_datagen.flow_from_directory('M:\\software\\AI_TRAINING_IBM\\flowers', class_mode='categorical', target_size=(64,64), batch_size=100)
```

Found 4317 images belonging to 5 classes.

```
xtest=test_datagen.flow_from_directory('M:\\software\\AI_TRAINING_IBM\\flowers', class_mode='categorical', target_size=(64,64), batch_size=100)
```

Found 4317 images belonging to 5 classes.

#### QUESTION – 4 & 5:

CREATE MODEL:

ADD LAYERS

```
✓ 0s [7] from tensorflow.keras.models import Sequential
      from tensorflow.keras.layers import Convolution2D,MaxPooling2D,Flatten,Dense

✓ 1s ▶ model=Sequential()
      model.add(Convolution2D(64,(3,3),activation='relu',input_shape=(64,64,3)))
      model.add(MaxPooling2D(pool_size=(2,2)))
      model.add(Flatten())
      model.add(Dense(300,activation='relu'))
      model.add(Dense(150,activation='relu'))
      model.add(Dense(5,activation='softmax'))
```

#### QUESTION – 6:

COMPILE :

```
✓ 0s ▶ model.compile(optimizer='adam',loss='categorical_crossentropy',metrics=['accuracy'])
```

#### QUESTION – 7:

FIT THE MODEL:

```
model.fit_generator(xtrain,
                    steps_per_epoch=len(xtrain),
                    epochs=20,
                    validation_data=xtest,
                    validation_steps=len(xtest))
```

#### QUESTION – 8:

SAVING THE MODEL

```
✓ [11] model.save('Flower.h5')
```

```
✓ ▶ from tensorflow.keras.preprocessing import image
    import numpy as np
```

### **QUESTION – 9:**

#### **TEST THE MODEL**

```
In [22]: img=image.load_img('M:\\software\\AI_TRAINING_IBM\\flowers\\sunflower\\6953297_8576bf4ea3.jpg',target_size=(64,64))
x=image.img_to_array(img)
x=np.expand_dims(x,axis=0)
prediction=np.argmax(model.predict(x))
op=['daisy','dandelion','rose','sunflower','tulip']
op[prediction]

1/1 [=====] - 0s 22ms/step
Out[22]: 'sunflower'
```

### **QUESTION -10:**

#### **TESTING THE MODEL**

```
In [24]: img=image.load_img('M:\\software\\AI_TRAINING_IBM\\download.jpg',target_size=(64,64))#randomly downloaded testing
x=image.img_to_array(img)
x=np.expand_dims(x,axis=0)
prediction=np.argmax(model.predict(x))
op=['daisy','dandelion','rose','sunflower','tulip']
op[prediction]

1/1 [=====] - 0s 22ms/step
Out[24]: 'sunflower'
```