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DEGREE:	Bachelor of Engineering
DEPARTMENT:	Electronics and communication Engineering
ASSIGNMENT:	3
PROJECT NAME:	Emerging Methods for Early Detection of Forest Fires

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

```
Drive already mounted at /content/drive; to attempt to forcibly remount, call
drive.mount("/content/drive", force_remount=True).
```

```
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
```

```
# 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
PROJECT/Assignment 3 /Flowers-Dataset/flowers')
```

```
Found 4327 images belonging to 5 classes.
```

```
# 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
PROJECT/Assignment 3 /Flowers-
Dataset/flowers',target_size=(76,76),class_mode='categorical',batch_size=100)
```

```
Found 4327 images belonging to 5 classes.
```

```
Flower_model = Sequential()
Flower_model.add(Convolution2D(32,(3,3),activation='relu',input_shape=(76,76,
3)))
Flower_model.add(MaxPooling2D(pool_size=(2,2)))
Flower_model.add(Flatten())
Flower_model.add(Dense(300,activation='relu'))
Flower_model.add(Dense(150,activation='relu'))
Flower_model.add(Dense(5,activation='softmax'))
```

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

Flower_model.fit(Xtrain,steps_per_epoch= len (Xtrain),epochs=
8,validation_data=Xtest,validation_steps= len (Xtest))

Epoch 1/8

---------------------------------------------------------------------------
InvalidArgumentError                      Traceback (most recent call last)
<ipython-input-19-da2ef1ee3f20> in <module>
----> 1 Flower_model.fit(Xtrain,steps_per_epoch= len (Xtrain),epochs=
8,validation_data=Xtest,validation_steps= len (Xtest))

/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_utils.py in
error_handler(*args, **kwargs)
     65     except Exception as e:  # pylint: disable=broad-except
     66       filtered_tb = _process_traceback_frames(e.__traceback__)
---> 67       raise e.with_traceback(filtered_tb) from None
     68     finally:
     69       del filtered_tb

/usr/local/lib/python3.7/dist-packages/tensorflow/python/eager/execute.py in
quick_execute(op_name, num_outputs, inputs, attrs, ctx, name)
     53     ctx.ensure_initialized()
     54     tensors = pywrap_tfe.TFE_Py_Execute(ctx._handle, device_name,
op_name,
---> 55                                         inputs, attrs, num_outputs)
     56   except core._NotOkStatusException as e:
     57     if name is not None:

InvalidArgumentError: Graph execution error:

Detected at node 'sequential_1/flatten_1/Reshape' defined at (most recent
call last):
    File "/usr/lib/python3.7/runpy.py", line 193, in _run_module_as_main
      "__main__", mod_spec)
    File "/usr/lib/python3.7/runpy.py", line 85, in _run_code
      exec(code, run_globals)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py", line
16, in <module>
      app.launch_new_instance()
    File "/usr/local/lib/python3.7/dist-
packages/traitlets/config/application.py", line 846, in launch_instance
      app.start()
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelapp.py",
line 612, in start
      self.io_loop.start()
    File "/usr/local/lib/python3.7/dist-
packages/tornado/platform/asyncio.py", line 132, in start
```

```
      self.asyncio_loop.run_forever()
    File "/usr/lib/python3.7/asyncio/base_events.py", line 541, in
run_forever
      self._run_once()
    File "/usr/lib/python3.7/asyncio/base_events.py", line 1786, in _run_once
      handle._run()
    File "/usr/lib/python3.7/asyncio/events.py", line 88, in _run
      self._context.run(self._callback, *self._args)
    File "/usr/local/lib/python3.7/dist-packages/tornado/ioloop.py", line
758, in _run_callback
      ret = callback()
    File "/usr/local/lib/python3.7/dist-packages/tornado/stack_context.py",
line 300, in null_wrapper
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 1233,
in inner
      self.run()
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 1147,
in run
      yielded = self.gen.send(value)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelbase.py",
line 381, in dispatch_queue
      yield self.process_one()
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 346,
in wrapper
      runner = Runner(result, future, yielded)
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 1080,
in __init__
      self.run()
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 1147,
in run
      yielded = self.gen.send(value)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelbase.py",
line 365, in process_one
      yield gen.maybe_future(dispatch(*args))
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 326,
in wrapper
      yielded = next(result)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelbase.py",
line 268, in dispatch_shell
      yield gen.maybe_future(handler(stream, idents, msg))
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 326,
in wrapper
      yielded = next(result)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelbase.py",
line 545, in execute_request
      user_expressions, allow_stdin,
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 326,
in wrapper
      yielded = next(result)
```

```
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/ipkernel.py", line
306, in do_execute
      res = shell.run_cell(code, store_history=store_history, silent=silent)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/zmqshell.py", line
536, in run_cell
      return super(ZMQInteractiveShell, self).run_cell(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-
packages/IPython/core/interactiveshell.py", line 2855, in run_cell
      raw_cell, store_history, silent, shell_futures)
    File "/usr/local/lib/python3.7/dist-
packages/IPython/core/interactiveshell.py", line 2881, in _run_cell
      return runner(coro)
    File "/usr/local/lib/python3.7/dist-
packages/IPython/core/async_helpers.py", line 68, in _pseudo_sync_runner
      coro.send(None)
    File "/usr/local/lib/python3.7/dist-
packages/IPython/core/interactiveshell.py", line 3058, in run_cell_async
      interactivity=interactivity, compiler=compiler, result=result)
    File "/usr/local/lib/python3.7/dist-
packages/IPython/core/interactiveshell.py", line 3249, in run_ast_nodes
      if (await self.run_code(code, result,  async_=asy)):
    File "/usr/local/lib/python3.7/dist-
packages/IPython/core/interactiveshell.py", line 3326, in run_code
      exec(code_obj, self.user_global_ns, self.user_ns)
    File "<ipython-input-19-da2ef1ee3f20>", line 1, in <module>
      Flower_model.fit(Xtrain,steps_per_epoch= len (Xtrain),epochs=
8,validation_data=Xtest,validation_steps= len (Xtest))
    File "/usr/local/lib/python3.7/dist-
packages/keras/utils/traceback_utils.py", line 64, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1409, in fit
      tmp_logs = self.train_function(iterator)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1051, in train_function
      return step_function(self, iterator)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1040, in step_function
      outputs = model.distribute_strategy.run(run_step, args=(data,))
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1030, in run_step
      outputs = model.train_step(data)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 889, in train_step
      y_pred = self(x, training=True)
    File "/usr/local/lib/python3.7/dist-
packages/keras/utils/traceback_utils.py", line 64, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 490, in __call__
```

```
      return super().__call__(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-
packages/keras/utils/traceback_utils.py", line 64, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/base_layer.py",
line 1014, in __call__
      outputs = call_fn(inputs, *args, **kwargs)
    File "/usr/local/lib/python3.7/dist-
packages/keras/utils/traceback_utils.py", line 92, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/sequential.py",
line 374, in call
      return super(Sequential, self).call(inputs, training=training,
mask=mask)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/functional.py",
line 459, in call
      inputs, training=training, mask=mask)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/functional.py",
line 596, in _run_internal_graph
      outputs = node.layer(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-
packages/keras/utils/traceback_utils.py", line 64, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/base_layer.py",
line 1014, in __call__
      outputs = call_fn(inputs, *args, **kwargs)
    File "/usr/local/lib/python3.7/dist-
packages/keras/utils/traceback_utils.py", line 92, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-
packages/keras/layers/reshaping/flatten.py", line 98, in call
      return tf.reshape(inputs, flattened_shape)
Node: 'sequential_1/flatten_1/Reshape'
Input to reshape is a tensor with 16516096 values, but the requested shape
requires a multiple of 43808
       [[{{node sequential_1/flatten_1/Reshape}}]]
[Op:__inference_train_function_3041]
```

```
Flower_model.save('Flower.h5')
```

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

```
test_img=image.load_img('/content/drive/MyDrive/IBM PROJECT/Assignment 3
/Flowers-
Dataset/flowers/rose/10090824183_d02c613f10_m.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]
```

```
1/1 [==============================] - 0s 32ms/step
```

```
{"type":"string"}
```

```
test_img1=image.load_img('/content/drive/MyDrive/IBM PROJECT/Assignment 3
/Flowers-
Dataset/flowers/dandelion/10200780773_c6051a7d71_n.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]
```

```
1/1 [==============================] - 0s 28ms/step
```

```
{"type":"string"}
```