

```
!unzip "/content/Flowers-Dataset.zip"
```

```

inflating: flowers/tulip/8712270243_8512c4t4bd.jpg
inflating: flowers/tulip/8712270665_57b5bda0a2_n.jpg
inflating: flowers/tulip/8712282563_3819afb7bc.jpg
inflating: flowers/tulip/8713357842_9964a93473_n.jpg
inflating: flowers/tulip/8713387500_6a9138b41b_n.jpg
inflating: flowers/tulip/8713388322_e5ae26263b_n.jpg
inflating: flowers/tulip/8713389178_66bceb71a8_n.jpg
inflating: flowers/tulip/8713390684_041148dd3e_n.jpg
inflating: flowers/tulip/8713391394_4b679ea1e3_n.jpg
inflating: flowers/tulip/8713392604_90631fb809_n.jpg
inflating: flowers/tulip/8713394070_b24561b0a9.jpg
inflating: flowers/tulip/8713396140_5af8136136.jpg
inflating: flowers/tulip/8713397358_0505cc0176_n.jpg
inflating: flowers/tulip/8713397694_bcbcbba2c2_n.jpg
inflating: flowers/tulip/8713398114_bc96f1b624_n.jpg
inflating: flowers/tulip/8713398614_88202e452e_n.jpg
inflating: flowers/tulip/8713398906_28e59a225a_n.jpg
inflating: flowers/tulip/8713407768_f880df361f.jpg
inflating: flowers/tulip/8717900362_2aa508e9e5.jpg
inflating: flowers/tulip/8722514702_7ecc68691c.jpg
inflating: flowers/tulip/8723767533_9145dec4bd_n.jpg
inflating: flowers/tulip/8729501081_b993185542_m.jpg
inflating: flowers/tulip/8733586143_3139db6e9e_n.jpg
inflating: flowers/tulip/8748266132_5298a91dcf_n.jpg
inflating: flowers/tulip/8750288831_5e49a9f29b.jpg
inflating: flowers/tulip/8757486380_90952c5377.jpg
inflating: flowers/tulip/8758464923_75a5ffe320_n.jpg
inflating: flowers/tulip/8758519201_16e8d2d781_n.jpg
inflating: flowers/tulip/8759594528_2534c0ec65_n.jpg
inflating: flowers/tulip/8759597778_7fca5d434b_n.jpg
inflating: flowers/tulip/8759601388_36e2a50d98_n.jpg
inflating: flowers/tulip/8759606166_8e475013fa_n.jpg
inflating: flowers/tulip/8759618746_f5e39fdbf8_n.jpg
inflating: flowers/tulip/8762189906_8223cef62f.jpg
inflating: flowers/tulip/8762193202_0fbf2f6a81.jpg
inflating: flowers/tulip/8768645961_8f1e097170_n.jpg
inflating: flowers/tulip/8817622133_a42bb90e38_n.jpg
inflating: flowers/tulip/88347159_746d14e6c1_m.jpg
inflating: flowers/tulip/88354855_c474fc66a3_m.jpg
inflating: flowers/tulip/8838914676_8ef4db7f50_n.jpg
inflating: flowers/tulip/8838975946_f54194894e_m.jpg
inflating: flowers/tulip/8838983024_5c1a767878_n.jpg
inflating: flowers/tulip/8892851067_79242a7362_n.jpg
inflating: flowers/tulip/8904780994_8867d64155_n.jpg
inflating: flowers/tulip/8908062479_449200a1b4.jpg
inflating: flowers/tulip/8908097235_c3e746d36e_n.jpg
inflating: flowers/tulip/9019694597_2d3bbdb17.jpg
inflating: flowers/tulip/9030467406_05e93ff171_n.jpg
inflating: flowers/tulip/9048307967_40a164a459_m.jpg
inflating: flowers/tulip/924782410_94ed7913ca_m.jpg
inflating: flowers/tulip/9378657435_89fabf13c9_n.jpg
inflating: flowers/tulip/9444202147_405290415b_n.jpg
inflating: flowers/tulip/9446982168_06c4d71da3_n.jpg
inflating: flowers/tulip/9831362123_5aac525a99_n.jpg
inflating: flowers/tulip/9870557734_88eb3b9e3b_n.jpg
inflating: flowers/tulip/9947374414_fdf1d0861c_n.jpg
inflating: flowers/tulip/9947385346_3a8cacea02_n.jpg

```

Saved successfully!



inflating: flowers/tulip/9976515506_d496c5e72c.jpg



```
from tensorflow.keras.preprocessing.image import ImageDataGenerator
train_datagen = ImageDataGenerator(rescale=1./255,
                                   zoom_range=0.2,
                                   horizontal_flip=True,vertical_flip=True)
test_datagen = ImageDataGenerator(rescale=1./255)
xtrain = train_datagen.flow_from_directory('/content/flowers',
                                          target_size=(64,64),
                                          class_mode='categorical',
                                          batch_size=24)
xtest = test_datagen.flow_from_directory('/content/flowers',
                                         target_size=(64,64),
                                         class_mode='categorical',
                                         batch_size=124)
```

Found 4317 images belonging to 5 classes.
Found 4317 images belonging to 5 classes.

```
from tensorflow.keras.models import Sequential
```

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

```
model = Sequential()
```

```
model.add(Convolution2D(32,(3,3),activation='relu',input_shape=(64,64,3)))
```

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

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

Saved successfully!



```
model.add(Dense(150,activation='relu'))
```

```
model.add(Dense(150,activation='relu'))
```

```
model.add(Dense(4,activation='softmax'))
```

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

```
len(xtrain)
```

180

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

```
model.fit(xtrain,  
          steps_per_epoch=len(xtrain),  
          epochs=5,  
          validation_data=xtest,  
          validation_steps=len(xtest))
```

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```

    return in_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
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)
Saved successfully!
File "/usr/local/lib/python3.7/dist-
packages/IPython/core/interactiveshell.py", line 3058, in run_cell_async
    ...
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-15-9a4ef8c8eb25>", line 5, in <module>
    validation_steps=len(xtest))
File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_utils.py",
line 64, in error handler
model.save('daisy.h5')
1409. in fit
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
import numpy as np

```



```
[127., 123., 122.]],  
  
[[ 44.,  47.,  26.],  
 [ 45.,  48.,  27.],  
 [ 53.,  55.,  34.],  
 ...,  
 [137., 133., 132.],  
 [133., 129., 128.],  
 [130., 126., 125.]]], dtype=float32)  
  
x.ndim  
  
3  
  
x = np.expand_dims(x,axis=0)  
  
x.ndim  
  
4  
  
pred = model.predict(x)  
  
1/1 [=====] - 0s 91ms/step  
  
pred  
  
array([[5.5619824e-36, 5.1318893e-25, 0.0000000e+00, 1.0000000e+00]],  
      dtype=float32)  
  
labels=["daisy","dandelion","rose","sunflower","tulip"]  
  
np.argmax(pred)  
  
labels[4]  
  
'tulip'  
  
labels[np.argmax(pred)]  
  
'sunflower'
```

Saved successfully!

