

#IMPORTING LIBRARIES

```
import numpy as np
import tensorflow as tf
import matplotlib.pyplot as plt
```

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

Mounted at /content/drive

```
cnn=tf.keras.models.load_model('/content/trained_model.h5')
```

WARNING:absl:Compiled the loaded model, but the compiled metrics have yet to be built. `model.compile_metrics` will be empty until you train or evaluate the model.

#VISUALIZATION AND PERFORMING PREDICTION ON SINGLE IMAGE

```
import cv2
image_path =
'/content/drive/MyDrive/Fruits_Vegetable_Recognition/test/apple/Image_
1.jpg'
img = cv2.imread(image_path)
plt.imshow(img)
plt.title("Test Image")
plt.xticks([])
plt.yticks([])
plt.show
```

```
<function matplotlib.pyplot.show(close=None, block=None)>
```

Test Image



#TESTING MODEL

```
image =
tf.keras.preprocessing.image.load_img(image_path,target_size=(64,64))
input_arr=tf.keras.preprocessing.image.img_to_array(image)
input_arr=np.array([input_arr])#Converting into 2D array
predictions = cnn.predict(input_arr)

1/1 _____ 0s 336ms/step

print(predictions)

[[9.9999928e-01 6.0643706e-33 2.0502983e-17 2.7019985e-29 8.2568122e-
28
 7.9013357e-10 6.2641407e-31 3.9528896e-36 1.5358931e-20
0.0000000e+00
 1.0972767e-27 2.8328843e-26 1.4188119e-20 2.6329860e-25 2.2426556e-
18
 8.6656100e-37 1.3178743e-36 1.9915388e-36 0.0000000e+00 2.6289160e-
29
 8.2982984e-14 1.3116159e-20 9.4998131e-25 9.8529526e-25
0.0000000e+00
 1.0791736e-27 4.9374051e-21 5.8923896e-23 3.5732593e-16 8.2138986e-
28
 0.0000000e+00 2.2525786e-38 1.4452261e-16 1.2556365e-20 7.0558224e-
```

07

8.6521620e-23]]

```
test_set= tf.keras.utils.image_dataset_from_directory(
    '/content/drive/MyDrive/Fruits_Vegetable_Recognition/test',
    labels = 'inferred',
    label_mode = 'categorical',
    class_names = None,
    color_mode = 'rgb',
    batch_size = 32,
    image_size = (64,64),
    shuffle = True,
    seed = None,
    validation_split = None,
    subset = None,
    interpolation = 'bilinear',
    follow_links = False,
    crop_to_aspect_ratio = False
)
```

Found 359 files belonging to 36 classes.

test_set.class_names

```
['apple',
 'banana',
 'beetroot',
 'bell pepper',
 'cabbage',
 'capsicum',
 'carrot',
 'cauliflower',
 'chilli pepper',
 'corn',
 'cucumber',
 'eggplant',
 'garlic',
 'ginger',
 'grapes',
 'jalepeno',
 'kiwi',
 'lemon',
 'lettuce',
 'mango',
 'onion',
 'orange',
 'paprika',
 'pear',
 'peas',
 'pineapple',
```

```
'pomegranate',  
'potato',  
'raddish',  
'soy beans',  
'spinach',  
'sweetcorn',  
'sweetpotato',  
'tomato',  
'turnip',  
'watermelon']  
  
result_index= np.where(predictions[0] == max(predictions[0]))  
print(result_index[0][0])  
  
0  
  
plt.imshow(img)  
plt.title("Test Image")  
plt.xticks([])  
plt.yticks([])  
plt.show  
  
<function matplotlib.pyplot.show(close=None, block=None)>
```

Test Image



#SINGLE PREDICTION

```
print("It's a {}".format(test_set.class_names[result_index[0][0]))
```

It's a apple

```
import cv2
image_path =
'/content/drive/MyDrive/Fruits_Vegetable_Recognition/test/beetroot/
Image_1.jpg'
img = cv2.imread(image_path)
plt.imshow(img)
plt.title("Test Image")
plt.xticks([])
plt.yticks([])
plt.show
```

```
<function matplotlib.pyplot.show(close=None, block=None)>
```

Test Image



```
image =
tf.keras.preprocessing.image.load_img(image_path,target_size=(64,64))
input_arr=tf.keras.preprocessing.image.img_to_array(image)
input_arr=np.array([input_arr])#Converting into 2D array
predictions = cnn.predict(input_arr)
```

1/1 ————— 0s 44ms/step

```
print(predictions)
```

```

[[1.1499422e-33 0.0000000e+00 1.0000000e+00 0.0000000e+00
0.0000000e+00
0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
0.0000000e+00
0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
0.0000000e+00
1.4673211e-37 0.0000000e+00 0.0000000e+00 0.0000000e+00
0.0000000e+00
3.8527939e-34 0.0000000e+00 0.0000000e+00 0.0000000e+00
0.0000000e+00
0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00 1.2130981e-
35
0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
0.0000000e+00
1.4906759e-25]]

```

```

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test_set.class_names
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```

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'beetroot',
'bell pepper',
'cabbage',
'capsicum',
'carrot',
'cauliflower',
'chilli pepper',
'corn',
'cucumber',
'eggplant',
'garlic',

```

```
'ginger',  
'grapes',  
'jalepeno',  
'kiwi',  
'lemon',  
'lettuce',  
'mango',  
'onion',  
'orange',  
'paprika',  
'pear',  
'peas',  
'pineapple',  
'pomegranate',  
'potato',  
'raddish',  
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'watermelon']
```

```
result_index= np.where(predictions[0] == max(predictions[0]))  
print(result_index[0][0])
```

```
2
```

```
plt.imshow(img)  
plt.title("Test Image")  
plt.xticks([])  
plt.yticks([])  
plt.show
```

```
<function matplotlib.pyplot.show(close=None, block=None)>
```

Test Image



```
print("It's a {}".format(test_set.class_names[result_index[0][0]]))
```

It's a beetroot