

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

Mounted at /content/drive

```
!wget https://bitbucket.org/ishaanjav/code-and-deploy-custom-tensorflow-lite-model/raw/a4febbfee178324b2083e322cdead7465d6dfd95/fruits.zi
```

--2024-12-05 05:23:03-- <https://bitbucket.org/ishaanjav/code-and-deploy-custom-tensorflow-lite-model/raw/a4febbfee178324b2083e322cdead7465d6dfd95/fruits.zip>
Resolving bitbucket.org (bitbucket.org)... 104.192.142.25, 104.192.142.24, 104.192.142.26, ...
Connecting to bitbucket.org (bitbucket.org)|104.192.142.25|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 105946856 (101M) [application/zip]
Saving to: 'fruits.zip'

fruits.zip 100%[=====>] 101.04M 17.1MB/s in 6.2s

2024-12-05 05:23:10 (16.2 MB/s) - 'fruits.zip' saved [105946856/105946856]

```
!unzip fruits.zip
```

inflating: __MACOSX/fruits/test/banana/._Screen Shot 2018-06-12 at 9.42.49 PM.png
inflating: fruits/test/banana/Screen Shot 2018-06-12 at 9.45.22 PM.png
inflating: __MACOSX/fruits/test/banana/._Screen Shot 2018-06-12 at 9.45.22 PM.png
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inflating: fruits/test/orange/Screen Shot 2018-06-12 at 11.55.42 PM.png
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inflating: fruits/test/orange/Screen Shot 2018-06-12 at 11.52.16 PM.png
inflating: __MACOSX/fruits/test/orange/._Screen Shot 2018-06-12 at 11.52.16 PM.png
inflating: fruits/test/orange/Screen Shot 2018-06-12 at 11.52.32 PM.png
inflating: __MACOSX/fruits/test/orange/._Screen Shot 2018-06-12 at 11.52.32 PM.png
inflating: fruits/test/orange/Screen Shot 2018-06-12 at 11.55.28 PM.png
inflating: __MACOSX/fruits/test/orange/._Screen Shot 2018-06-12 at 11.55.28 PM.png

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

```
tf.__version__
```

```
↗ '2.17.1'
```

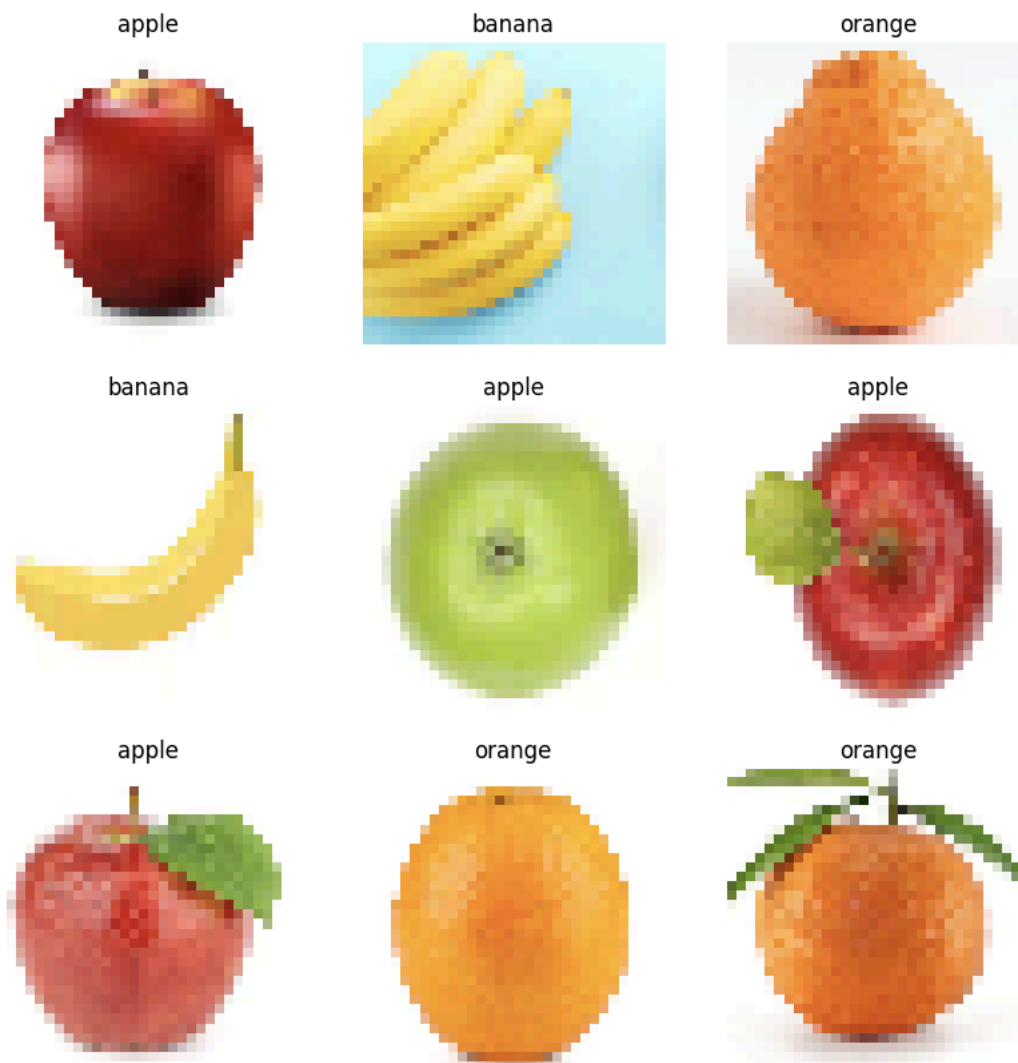
```
img_height, img_width = 32, 32
batch_size = 20
```

```
train_ds = tf.keras.utils.image_dataset_from_directory(
    "fruits/train",
    image_size = (img_height, img_width),
    batch_size = batch_size
)
val_ds = tf.keras.utils.image_dataset_from_directory(
    "fruits/validation",
    image_size = (img_height, img_width),
    batch_size = batch_size
)
test_ds = tf.keras.utils.image_dataset_from_directory(
    "fruits/test",
    image_size = (img_height, img_width),
    batch_size = batch_size
)
```

```
↗ Found 460 files belonging to 3 classes.
Found 66 files belonging to 3 classes.
Found 130 files belonging to 3 classes.
```

```
class_names = ["apple", "banana", "orange"]
plt.figure(figsize=(10,10))
for images, labels in train_ds.take(1):
    for i in range(9):
        ax = plt.subplot(3, 3, i + 1)
        plt.imshow(images[i].numpy().astype("uint8"))
        plt.title(class_names[labels[i]])
        plt.axis("off")
```

```
↗
```



```

model = tf.keras.Sequential(
    [
        tf.keras.layers.Rescaling(1./255),
        tf.keras.layers.Conv2D(32, 3, activation="relu"),
        tf.keras.layers.MaxPooling2D(),
        tf.keras.layers.Conv2D(64, 3, activation="relu"),
        tf.keras.layers.MaxPooling2D(),
        tf.keras.layers.Conv2D(128, 3, activation="relu"),
        tf.keras.layers.MaxPooling2D(),
        tf.keras.layers.Flatten(),
        tf.keras.layers.Dense(128, activation="softmax"),
        tf.keras.layers.Dense(3)
    ]
)

model.compile(
    optimizer="rmsprop",
    loss=tf.losses.SparseCategoricalCrossentropy(from_logits = True),
    metrics=['accuracy']
)

```

```

model.fit(
    train_ds,
    validation_data = val_ds,
    epochs = 20
)

```

```

Epoch 1/20
23/23 ————— 7s 121ms/step - accuracy: 0.3081 - loss: 1.0985 - val_accuracy: 0.3333 - val_loss: 1.0948
Epoch 2/20
23/23 ————— 6s 66ms/step - accuracy: 0.3926 - loss: 1.0900 - val_accuracy: 0.3939 - val_loss: 1.0695
Epoch 3/20
23/23 ————— 1s 65ms/step - accuracy: 0.5685 - loss: 1.0519 - val_accuracy: 0.6212 - val_loss: 0.9937
Epoch 4/20
23/23 ————— 2s 66ms/step - accuracy: 0.5086 - loss: 1.0158 - val_accuracy: 0.6364 - val_loss: 0.9662
Epoch 5/20
23/23 ————— 1s 64ms/step - accuracy: 0.5917 - loss: 0.9813 - val_accuracy: 0.6212 - val_loss: 0.9458
Epoch 6/20
23/23 ————— 2s 66ms/step - accuracy: 0.5902 - loss: 0.9627 - val_accuracy: 0.6212 - val_loss: 0.9415
Epoch 7/20
23/23 ————— 2s 79ms/step - accuracy: 0.6446 - loss: 0.9468 - val_accuracy: 0.6212 - val_loss: 0.9178
Epoch 8/20
23/23 ————— 3s 114ms/step - accuracy: 0.7063 - loss: 0.9217 - val_accuracy: 0.8485 - val_loss: 0.8637
Epoch 9/20
23/23 ————— 2s 89ms/step - accuracy: 0.7638 - loss: 0.8996 - val_accuracy: 0.6818 - val_loss: 0.8859
Epoch 10/20
23/23 ————— 2s 66ms/step - accuracy: 0.8070 - loss: 0.8732 - val_accuracy: 0.7727 - val_loss: 0.8573
Epoch 11/20
23/23 ————— 3s 67ms/step - accuracy: 0.8702 - loss: 0.8371 - val_accuracy: 0.8939 - val_loss: 0.8024
Epoch 12/20
23/23 ————— 3s 65ms/step - accuracy: 0.8481 - loss: 0.8222 - val_accuracy: 0.7879 - val_loss: 0.8147
Epoch 13/20
23/23 ————— 2s 66ms/step - accuracy: 0.9209 - loss: 0.7679 - val_accuracy: 0.8485 - val_loss: 0.7821
Epoch 14/20
23/23 ————— 2s 94ms/step - accuracy: 0.8619 - loss: 0.7859 - val_accuracy: 0.8939 - val_loss: 0.7288
Epoch 15/20
23/23 ————— 3s 106ms/step - accuracy: 0.8678 - loss: 0.7634 - val_accuracy: 0.9545 - val_loss: 0.6795
Epoch 16/20
23/23 ————— 2s 68ms/step - accuracy: 0.9084 - loss: 0.7241 - val_accuracy: 0.9848 - val_loss: 0.6574
Epoch 17/20
23/23 ————— 2s 66ms/step - accuracy: 0.9510 - loss: 0.6783 - val_accuracy: 0.9242 - val_loss: 0.6594
Epoch 18/20
23/23 ————— 2s 67ms/step - accuracy: 0.9673 - loss: 0.6502 - val_accuracy: 0.9242 - val_loss: 0.6559
Epoch 19/20
23/23 ————— 1s 65ms/step - accuracy: 0.9404 - loss: 0.6486 - val_accuracy: 0.9697 - val_loss: 0.6184
Epoch 20/20
23/23 ————— 2s 66ms/step - accuracy: 0.9454 - loss: 0.6295 - val_accuracy: 0.9242 - val_loss: 0.6224
<keras.src.callbacks.history.History at 0x7f997f6ddb70>

```

```
model.evaluate(test_ds)
```

```

7/7 ————— 1s 137ms/step - accuracy: 0.8946 - loss: 0.6703
[0.6299712657928467, 0.9307692050933838]

```

```
import numpy
```

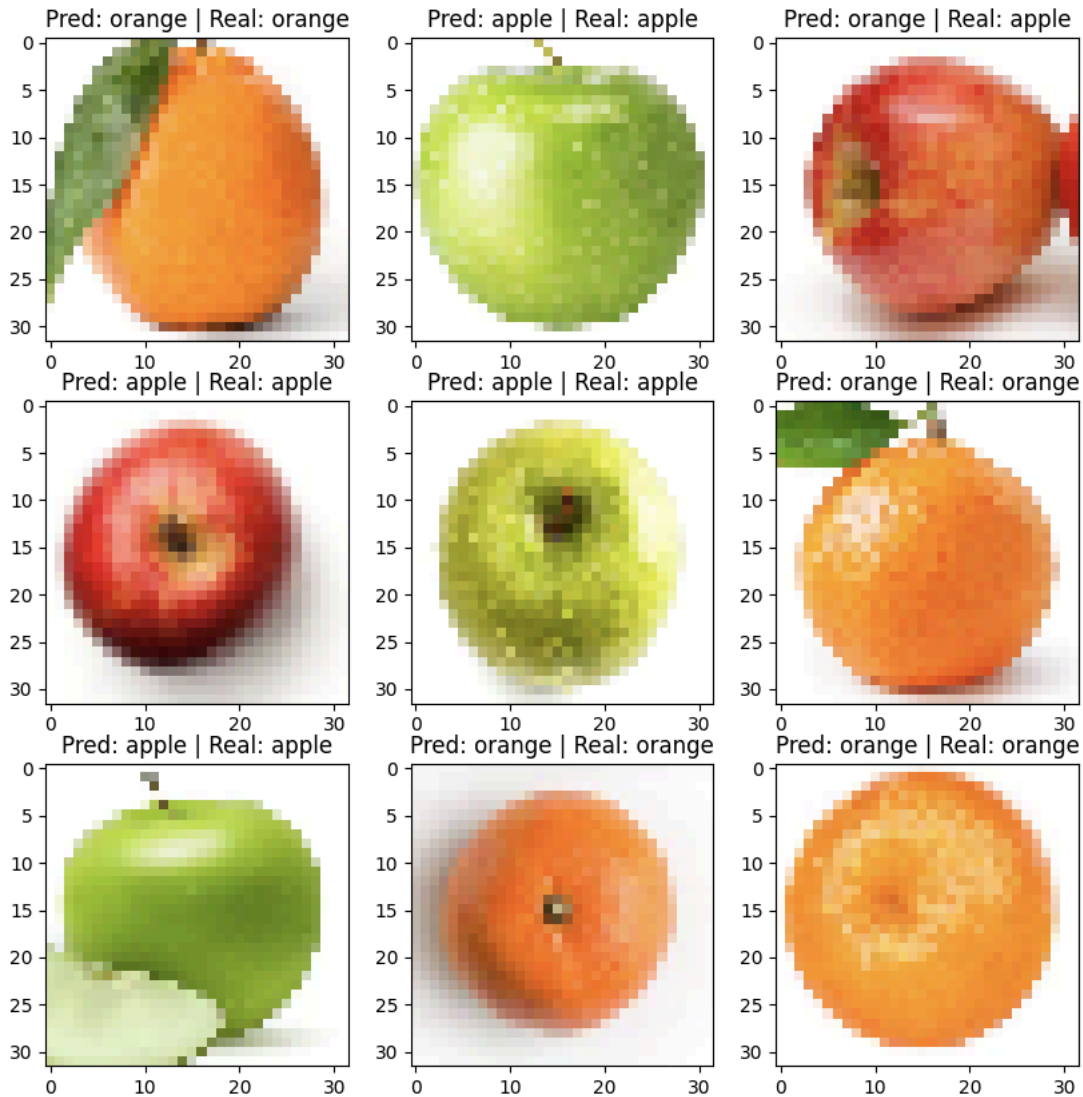
```

plt.figure(figsize=(10,10))
for images, labels in test_ds.take(1):
    classifications = model(images)
    # print(classifications)

for i in range(9):
    ax = plt.subplot(3, 3, i + 1)

```

```
plt.imshow(images[i].numpy().astype("uint8"))
index = numpy.argmax(classifications[i])
plt.title("Pred: " + class_names[index] + " | Real: " + class_names[labels[i]])
```



```
converter = tf.lite.TFLiteConverter.from_keras_model(model)
tflite_model = converter.convert()
```

```
with open("model.tflite", 'wb') as f:
    f.write(tflite_model)
```



Saved artifact at '/tmp/tmpkv2ud6gi'. The following endpoints are available:

```
* Endpoint 'serve'
  args_0 (POSITIONAL_ONLY): TensorSpec(shape=(None, 32, 32, 3), dtype=tf.float32, name='keras_tensor')
Output Type:
  TensorSpec(shape=(None, 3), dtype=tf.float32, name=None)
Captures:
140297187803552: TensorSpec(shape=(), dtype=tf.resource, name=None)
140297187816224: TensorSpec(shape=(), dtype=tf.resource, name=None)
140297187817280: TensorSpec(shape=(), dtype=tf.resource, name=None)
140297187988352: TensorSpec(shape=(), dtype=tf.resource, name=None)
140297187987472: TensorSpec(shape=(), dtype=tf.resource, name=None)
140297187995392: TensorSpec(shape=(), dtype=tf.resource, name=None)
140297187804960: TensorSpec(shape=(), dtype=tf.resource, name=None)
140297187998384: TensorSpec(shape=(), dtype=tf.resource, name=None)
140296984790112: TensorSpec(shape=(), dtype=tf.resource, name=None)
140296984790464: TensorSpec(shape=(), dtype=tf.resource, name=None)
```

Start coding or [generate](#) with AI.

