Sprint-1

Image Preprocessing

Date	29 October 2022
Team ID	PNT2022TMID04836
Project Name	AI-powered Nutrition Analyzer for Fitness Enthusiasts
Maximum Marks	

Dataset:

- In our dataset we have collected images of the five variety of fruits.
    - Apple
    - Orange
    - Pineapple
    - Watermelon
    - Banana

Drive link : https://drive.google.com/file/d/1jzDjV7jYcIzlIieagaJdubMJ3YeLsry1/view?usp=share_link

Image Preprocessing:

- **Importing The ImageDataGenerator Library**

```
from keras.preprocessing.image import ImageDataGenerator
```

- **Configuring ImageDataGenerator Class**

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

- **Applying Image DataGenerator Functionality To Trainset And Testset**

```
x_train = train_datagen.flow_from_directory(r'/content/Dataset/TRAIN_SET',
   target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse')
x_test = test_datagen.flow_from_directory( r'/content/Dataset/TEST_SET',
   target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse')
```

Data Collection

Download the dataset here

```
# Unzipping the dataset
!unzip '/content/Dataset.zip'
```

```
  inflating: Dataset/TRAIN_SET/WATERMELON/r_288_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_289_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_28_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_290_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_291_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_292_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_293_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_294_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_295_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_296_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_297_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_298_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_299_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_29_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_2_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_300_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_301_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_302_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_303_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_304_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_305_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_306_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_307_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_308_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_309_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_30_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_310_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_311_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_312_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_313_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_314_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_315_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_31_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_32_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_33_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_34_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_35_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_36_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_37_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_38_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_39_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_3_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_40_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_41_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_42_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_43_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_44_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_45_100.jpg
```

```
  inflating: Dataset/TRAIN_SET/WATERMELON/r_46_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_4_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_50_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_57_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_5_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_6_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_7_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_81_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_8_100.jpg
  inflating: Dataset/TRAIN_SET/WATERMELON/r_9_100.jpg
```

Image Preprocessing

```
#Importing The ImageDataGenerator Library
from keras.preprocessing.image import ImageDataGenerator
```

Image Data Augmentation

```
#Configure ImageDataGenerator Class
train_datagen = ImageDataGenerator(rescale=1./255,shear_range=0.2,zoom_range=0.2,horizonta
test_datagen=ImageDataGenerator(rescale=1./255)
```

Applying Image DataGenerator Functionality To TrainsetAnd Testset

```
#Applying Image DataGenerator Functionality To Trainset And Testset
x_train = train_datagen.flow_from_directory(
    r'/content/Dataset/TRAIN_SET',
    target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse')
#Applying Image DataGenerator Functionality To Testset
x_test = test_datagen.flow_from_directory(
    r'/content/Dataset/TEST_SET',
    target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse')
```

```
 Found 4118 images belonging to 5 classes.
 Found 929 images belonging to 5 classes.
```

```
#checking the number of classes
print(x_train.class_indices)
```

```
 {'APPLES': 0, 'BANANA': 1, 'ORANGE': 2, 'PINEAPPLE': 3, 'WATERMELON': 4}
```

```
#checking the number of classes
print(x_test.class_indices)
```

```
{'APPLES': 0, 'BANANA': 1, 'ORANGE': 2, 'PINEAPPLE': 3, 'WATERMELON': 4}
```

```
from collections import Counter as c
c(x_train .labels)
```

```
Counter({0: 995, 1: 1354, 2: 1019, 3: 275, 4: 475})
```