Sprint-1

Image Pre-processing

Date	29 October 2022
Team ID	PNT2022TMID32374
Project Name	AI-powered Nutrition Analyzer for Fitness Enthusiasts

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/1hgEWyKicgrntbY5LSkuW_v6G4C93AQfN/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')

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▾ Data Collection

Download the dataset [here](#)

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

```
     inflating: Dataset/TEST_SET/PINEAPPLE/5.jpeg
     inflating: Dataset/TEST_SET/PINEAPPLE/5.jpg
     inflating: Dataset/TEST_SET/PINEAPPLE/6.jpeg
     inflating: Dataset/TEST_SET/PINEAPPLE/7.jpeg
     inflating: Dataset/TEST_SET/PINEAPPLE/8.jpeg
     inflating: Dataset/TEST_SET/PINEAPPLE/9.jpeg
     inflating: Dataset/TEST_SET/PINEAPPLE/PINEAPPLE 1.jpeg
      creating: Dataset/TEST_SET/WATERMELON/
     inflating: Dataset/TEST_SET/WATERMELON/1.jpg
     inflating: Dataset/TEST_SET/WATERMELON/10.jpg
     inflating: Dataset/TEST_SET/WATERMELON/11.jpg
     inflating: Dataset/TEST_SET/WATERMELON/12.jpg
     inflating: Dataset/TEST_SET/WATERMELON/13.jpg
     inflating: Dataset/TEST_SET/WATERMELON/14.jpg
     inflating: Dataset/TEST_SET/WATERMELON/15.jpg
     inflating: Dataset/TEST_SET/WATERMELON/16.jpg
     inflating: Dataset/TEST_SET/WATERMELON/17.jpg
     inflating: Dataset/TEST_SET/WATERMELON/18.jpg
     inflating: Dataset/TEST_SET/WATERMELON/19.jpg
     inflating: Dataset/TEST_SET/WATERMELON/2.jpg
     inflating: Dataset/TEST_SET/WATERMELON/20.jpg
     inflating: Dataset/TEST_SET/WATERMELON/3.jpg
     inflating: Dataset/TEST_SET/WATERMELON/4.jpg
     inflating: Dataset/TEST_SET/WATERMELON/5.jpg
     inflating: Dataset/TEST_SET/WATERMELON/6.jpg
     inflating: Dataset/TEST_SET/WATERMELON/7.jpg
     inflating: Dataset/TEST_SET/WATERMELON/8.jpg
     inflating: Dataset/TEST_SET/WATERMELON/9.jpg
     creating: Dataset/TRAIN_SET/
      creating: Dataset/TRAIN_SET/APPLES/
     inflating: Dataset/TRAIN_SET/APPLES/n07740461_10012.jpg
     inflating: Dataset/TRAIN_SET/APPLES/n07740461_10019.jpg
     inflating: Dataset/TRAIN_SET/APPLES/n07740461_10037.jpg
     inflating: Dataset/TRAIN_SET/APPLES/n07740461_10065.jpg
     inflating: Dataset/TRAIN_SET/APPLES/n07740461_10067.jpg
     inflating: Dataset/TRAIN_SET/APPLES/n07740461_10074.jpg
     inflating: Dataset/TRAIN_SET/APPLES/n07740461_10104.jpg
     inflating: Dataset/TRAIN_SET/APPLES/n07740461_10128.jpg
     inflating: Dataset/TRAIN_SET/APPLES/n07740461_10129.jpg
     inflating: Dataset/TRAIN_SET/APPLES/n07740461_10166.jpg
```

```
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10183.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10218.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10219.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10239.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10242.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10257.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10266.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10273.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10284.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_1033.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10335.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10336.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10357.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10363.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10369.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10374.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10403.jpg
inflating: Dataset/TRAIN_SET/APPLES/n07740461_10409.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 974 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})
```