

Sprint-1
Image Preprocessing

Date	17 November 2022
Team ID	PNT2022TMID10671
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

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

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
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Dataset/TRAIN_SET/WATERMELON/r_300_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_301_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_302_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_303_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_304_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_305_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_306_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_307_100.jpginflating:
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.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_310_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_311_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_312_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_313_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_314_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_315_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_31_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_32_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_33_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_34_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_35_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_36_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_37_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_38_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_39_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_3_100.jpg inflating:
Dataset/TRAIN_SET/WATERMELON/r_40_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_41_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_42_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_43_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_44_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_45_100.jpg
```

```
inflating: Dataset/TRAIN_SET/WATERMELON/r_46_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_4_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_50_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_57_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_5_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_6_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_7_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_81_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_8_100.jpginflating:
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,horizontala
test_datagen=ImageDataGenerator(rescale=1./255))
```

▼ Applying Image DataGenerator Functionality To TrainsetAnd Testset

```
#Applying Image DataGenerator Functionality To Trainset And Testsetx_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 classesprint(x_train.class_indices)
```

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

```
#checking the number of classesprint(x_test.class_indices)
```

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

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

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