

Image Preprocessing

Team ID	PNT2022TMID10679
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

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.jp

ginflating:

Dataset/TRAIN_SET/WATERMELON/r_289_100.jp

ginflating:

Dataset/TRAIN_SET/WATERMELON/r_28_100.jpg

inflating:

Dataset/TRAIN_SET/WATERMELON/r_290_100.jp

ginflating:

Dataset/TRAIN_SET/WATERMELON/r_291_100.jp

ginflating:

Dataset/TRAIN_SET/WATERMELON/r_292_100.jp

ginflating:

Dataset/TRAIN_SET/WATERMELON/r_293_100.jp

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Dataset/TRAIN_SET/WATERMELON/r_294_100.jp

ginflating:

Dataset/TRAIN_SET/WATERMELON/r_295_100.jp

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Dataset/TRAIN_SET/WATERMELON/r_296_100.jp

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Dataset/TRAIN_SET/WATERMELON/r_297_100.jp

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Dataset/TRAIN_SET/WATERMELON/r_298_100.jp

ginflating:

Dataset/TRAIN_SET/WATERMELON/r_299_100.jp

ginflating:

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.jp

ginflating:

Dataset/TRAIN_SET/WATERMELON/r_301_100.jp

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Dataset/TRAIN_SET/WATERMELON/r_302_100.jp

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Dataset/TRAIN_SET/WATERMELON/r_303_100.jp

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Dataset/TRAIN_SET/WATERMELON/r_304_100.jp

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Dataset/TRAIN_SET/WATERMELON/r_305_100.jp

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Dataset/TRAIN_SET/WATERMELON/r_307_100.jp
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Dataset/TRAIN_SET/WATERMELON/r_308_100.jpg
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Dataset/TRAIN_SET/WATERMELON/r_309_100.jp
ginflating:
Dataset/TRAIN_SET/WATERMELON/r_30_100.jpg
inflating:
Dataset/TRAIN_SET/WATERMELON/r_310_100.jp
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Dataset/TRAIN_SET/WATERMELON/r_311_100.jp
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Dataset/TRAIN_SET/WATERMELON/r_315_100.jp
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Dataset/TRAIN_SET/WATERMELON/r_31_100.jpg
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Dataset/TRAIN_SET/WATERMELON/r_40_100.jpg
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Dataset/TRAIN_SET/WATERMELON/r_41_100.jpg
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Dataset/TRAIN_SET/WATERMELON/r_43_100.jpg
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Dataset/TRAIN_SET/WATERMELON/r_45_100.jpg

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Dataset/TRAIN_SET/WATERMELON/r_4_100.jpginflating:
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.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_6_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_7_100.jpginflating:
Dataset/TRAIN_SET/WATERMELON/r_81_100.jpg
inflating:
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, horizontal  
test_datagen=ImageDataGenerator(rescale=1./255)
```

Applying Image DataGenerator Functionality To TrainsetAndTestset

▼ #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/TES
T_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})

