Sprint-1

Image Preprocessig

Date	14 November 2022
Team ID	PNT2022TMID27947
Project Name	AI-powered Nutrition Analyzer for Fitness Enthusiasts
Maximum Marks	6

Dataset:

- In our dataset we have collected images of the five variety offruits.
    - 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.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_289_100.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_28_100.jp
g inflating:
Dataset/TRAIN_SET/WATERMELON/r_290_100.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_291_100.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_292_100.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_293_100.j
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Dataset/TRAIN_SET/WATERMELON/r_294_100.j
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Dataset/TRAIN_SET/WATERMELON/r_295_100.j
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Dataset/TRAIN_SET/WATERMELON/r_296_100.j
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Dataset/TRAIN_SET/WATERMELON/r_297_100.j
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Dataset/TRAIN_SET/WATERMELON/r_298_100.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_299_100.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_29_100.jp
g inflating:
Dataset/TRAIN_SET/WATERMELON/r_2_100.jpg
inflating:
Dataset/TRAIN_SET/WATERMELON/r_300_100.j
pg                                  inflating:
Dataset/TRAIN_SET/WATERMELON/r_301_100.j
pg                                  inflating:
Dataset/TRAIN_SET/WATERMELON/r_302_100.j
pg                                  inflating:
Dataset/TRAIN_SET/WATERMELON/r_303_100.j
pg                                  inflating:
```

Dataset/TRAIN_SET/WATERMELON/r_304_100.j
pg inflating:
Dataset/TRAIN_SET/WATERMELON/r_305_100.j
pg inflating:
Dataset/TRAIN_SET/WATERMELON/r_306_100.j
pg inflating:
Dataset/TRAIN_SET/WATERMELON/r_307_100.j
pg inflating:
Dataset/TRAIN_SET/WATERMELON/r_308_100.j
pg
inflating:
Dataset/TRAIN_SET/WATERMELON/r_309_100.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_30_100.jp
g inflating:
Dataset/TRAIN_SET/WATERMELON/r_310_100.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_311_100.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_312_100.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_313_100.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_314_100.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_315_100.j
pginflating:
Dataset/TRAIN_SET/WATERMELON/r_31_100.jp
g inflating:
Dataset/TRAIN_SET/WATERMELON/r_32_100.jp
g inflating:
Dataset/TRAIN_SET/WATERMELON/r_33_100.jp
g inflating:
Dataset/TRAIN_SET/WATERMELON/r_34_100.jp
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Dataset/TRAIN_SET/WATERMELON/r_38_100.jp
g inflating:
Dataset/TRAIN_SET/WATERMELON/r_39_100.jp
g inflating:
Dataset/TRAIN_SET/WATERMELON/r_3_100.jpg
inflating:
Dataset/TRAIN_SET/WATERMELON/r_40_100.j
pg 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.jpginflating: Dataset/TRAIN_SET/WATERMELON/r_4_100.jpg inflating: Dataset/TRAIN_SET/WATERMELON/r_50_100.jpginflating: Dataset/TRAIN_SET/WATERMELON/r_57_100.jpginflating: 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.jpginflating: 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 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_di
      rectory(
      r'/content/Dataset/TEST_S
      ET',
      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.clas
s_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 cc(x_train
.labels)
```

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

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