

# Apply Image Data Generator Functionality to Trainset and Test set

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Maximum Marks	4 MARKS

Let us apply ImageDataGenerator functionality to Trainset and Testset by using the following code

For Training set using flow\_from\_directory function.

This function will return batches of images from the subdirectories 'apples', 'banana', 'orange', 'pineapple', 'watermelon' together with labels 0 to 4 {'apples': 0, 'banana': 1, 'orange': 2, 'pineapple': 3, 'watermelon': 4}

Arguments:

- directory: Directory where the data is located. If labels are "inferred", it should contain subdirectories, each containing images for a class. Otherwise, the directory structure is ignored.
- Batch size: Size of the batches of data. Default: 32.
- Target size: Size to resize images after they are read from disk.
- Class mode:
  - 'int': means that the labels are encoded as integers (e.g. for sparse\_categorical\_crossentropy loss).
  - 'categorical' means that the labels are encoded as a categorical vector (e.g. for categorical\_crossentropy loss).
  - 'binary' means that the labels (there can be only 2) are encoded as float32 scalars with values 0 or 1 (e.g. for binary\_crossentropy).
  - None (no labels).

### ### Loading our data and performing data agumentation

```
#performing data agumentation to train data
x_train = train_datagen.flow_from_directory(
    r'C:\Users\DELL\Desktop\Desk Files\Nutrition Analysis Using Image Classification\DataSet\TRAIN_SET',
    target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse')

#performing data agumentation to test data
x_test = test_datagen.flow_from_directory(
    r'C:\Users\DELL\Desktop\Desk Files\Nutrition Analysis Using Image Classification\DataSet\TEST_SET',
    target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse')

Found 2626 images belonging to 5 classes.
Found 1055 images belonging to 5 classes.
```

We notice that 2626 images are belonging to 5 classes for training and 1055 images belong to 5 classes for testing purposes.

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

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

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

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

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

Counter({0: 606, 1: 445, 2: 479, 3: 621, 4: 475})
```

Here we are checking the number of classes in train and test data and counting the number of images in each class of train set data by using the counter function.

### **Image Data Generator:**

```
train_datagen = ImageDataGenerator(
    rescale=1./255,
    shear_range=0.2,
    zoom_range=0.2,
    horizontal_flip=True)
test_datagen = ImageDataGenerator(rescale=1./255)
train_generator = train_datagen.flow_from_directory(
    'data/train',
    target_size=(150, 150),
    batch_size=32,
    class_mode='binary')
validation_generator = test_datagen.flow_from_directory(
    'data/validation',
    target_size=(150, 150),
    batch_size=32,
    class_mode='binary')
model.fit(
    train_generator,
    steps_per_epoch=2000,
    epochs=50,
    validation_data=validation_generator,
    validation_steps=800)
```