

# Dataset Pre-Processing

## Importing the Libraries

```
1 from tensorflow.keras.layers import Dense , Flatten , Input
2 from tensorflow.keras.models import Model
3 from tensorflow.keras.preprocessing import image
4 from tensorflow.keras.preprocessing.image import ImageDataGenerator , load_img
5 from tensorflow.keras.applications.xception import Xception , preprocess_input
6 from glob import glob
7 import numpy as np
8 import matplotlib.pyplot as plt
```

## Configure ImageDataGenerator Class

ImageDataGenerator class is instantiated and the configuration for the types of data augmentation

There are five main types of data augmentation techniques for image data; specifically:

- Image shifts via the width\_shift\_range and height\_shift\_range arguments.
- The image flips via the horizontal\_flip and vertical\_flip arguments.
- Image rotations via the rotation\_range argument
- Image brightness via the brightness\_range argument.
- Image zoom via the zoom\_range argument.

An instance of the ImageDataGenerator class can be constructed for train and test.

```
1 train_datagen = ImageDataGenerator ( rescale = 1./255 ,
2                                     shear_range = 0.2 ,
3                                     zoom_range = 0.2 ,
4                                     horizontal_flip = True )
5 test_datagen = ImageDataGenerator ( rescale = 1./255 )
```

Let us apply ImageDataGenerator functionality to the Train set and Test set by using the following code. For Training set using flow\_from\_directory function.

## Apply ImageDataGenerator Functionality To Train Set And Test Set

This function will return batches of images from the subdirectories

```
[ ] 1 training_set = train_datagen.flow_from_directory('preprocessed dataset/preprocessed dataset/training', target_size = ( 299 , 299 ),batch_size = 32, class_mode = 'categorical')
2 test_set = test_datagen.flow_from_directory('preprocessed dataset/preprocessed dataset/testing', target_size = ( 299 , 299 ),batch_size = 32,class_mode = 'categorical')

Found 3662 images belonging to 5 classes.
Found 734 images belonging to 5 classes.
```