Image Pre Processing

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Project Name	Project – Intelligent Vehicle Damage Assessment and Cost Estimator for Insurance Companies

In this milestone, we will be improving the image data that suppresses unwilling distortions or enhances some image features important for further processing, although performing some geometric transformations of images like rotation, scaling, translation, etc.

Import The ImageDataGenerator Library

- Image data augmentation is a technique that can be used to artificially expand the size of a training dataset by creating modified versions of images in the dataset.
- The Keras deep learning neural network library provides the capability to fit models using image data augmentation via the ImageDataGenerator class.

- Let us import the ImageDataGenerator class from TensorFlow Keras

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.

Apply ImageDataGenerator Functionality To Trainset And Testset

- 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

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 which is 64.
- 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 Augmentation

Service Details - IBM C | Lets Predict | Gmail | Documents/IBM/ | Image preprocessing | ImageGenerator - Jup | main - Jupyter Noteb | CreateDatabase - Jup | XblV7RVeAVpEh9xtXC

localhost:8890/notebooks/Documents/IBM/Image%20preprocessing.ipynb

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jupyter **Image preprocessing** Last Checkpoint: a few seconds ago (unsaved changes)

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Run Code

In [3]:
```
import tensorflow as tf
from tensorflow import keras
```

In [4]:
```
#import image datagenerator library
from tensorflow.keras.preprocessing.image import ImageDataGenerator
```

In [5]:
```
#setting parameter for image data augementation to the training data
train_datagen = ImageDataGenerator(rescale=1./255,shear_range=0.1,zoom_range=0.1,horizontal_flip=True)
```

In [6]:
```
#image data augementation to the testing data
val_datagen = ImageDataGenerator(rescale = 1./255)
```

In [7]:
```
training_set = train_datagen.flow_from_directory(r'D:\Web-codeRed\Dataset\body\training',target_size = (224, 224),batch_size = 1
test_set = val_datagen.flow_from_directory(r'D:\Web-codeRed\Dataset\body\validation',target_size = (224, 224),batch_size = 10,cla
```

```
Found 979 images belonging to 3 classes.
Found 171 images belonging to 3 classes.
```

In [8]:
```
en.flow_from_directory(r'D:\Web-codeRed\Dataset\level\training',target_size = (224, 224),batch_size=10,class_mode ='categorical')
w_from_directory(r'D:\Web-codeRed\Dataset\level\validation',target_size = (224, 224), batch_size = 10,class_mode = 'categorical')
```

```
Found 979 images belonging to 3 classes.
Found 171 images belonging to 3 classes.
```