DATA AUGMENTATION

In [1]:
```
#pip install keras
```

In [10]:
```
#pip install tensorflow
```

In [11]:
```
from keras.preprocessing.image import ImageDataGenerator ,array_to_img ,img_to_array, load_img


datagen = ImageDataGenerator(
            rotation_range=40,
            width_shift_range=0.2 ,
            height_shift_range=0.2,
            shear_range=0.2,
            zoom_range=0.2,
            horizontal_flip=True,
            fill_mode='nearest')
```

In [7]:
```
img = load_img(r"E:\resume projects\car image.jpg")
```

In [8]:
```
img
```

Out[8]:

In [9]:
```
rray(img) #this is numpy array with shape(3,150,150)
e((1,) + x.shape) #this is numpy array with shape(1,3,150,150)


) command below generates batches of randomly transfered images
 the results to the preview directory


n datagen.flow(x, batch_size=1,
               save_to_dir=r"E:\resume projects\cnn car loaded" , save_prefix='cat' , save_format='jpeg'):


                i+= 1
                if i>30:
                 break # we use break for brekaing otherwise  image generation would be infinity
```

In [ ]: