In [ ]:

```
https://machinelearningmastery.com/how-to-configure-image-data-augmentation-when-training-deep-learning-neural-networks/
```

In [ ]:

```
Horizontal and Vertical shift augumentations
A shift to an image means moving all pixels of the image in one direction, such as horizontally or vertically,
while keeping the image dimensions the same.

This means that some of the pixels will be clipped off the image and there will be a region of the image where
new pixel values will have to be specified.
```

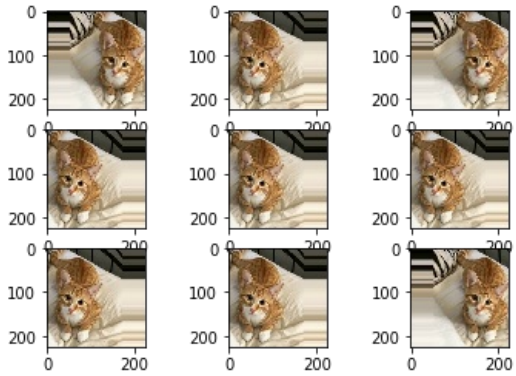
In [1]:

```
from numpy import expand_dims
from keras.preprocessing.image import load_img,ImageDataGenerator,img_to_array
import matplotlib.pyplot as plt
```

```
Using TensorFlow backend.
```

In [6]:

```
img=load_img('/home/anudeep/Desktop/cat.jpeg')
data=img_to_array(img)
samples=expand_dims(data,0)
datagen=ImageDataGenerator(width_shift_range=[-50,50])
it=datagen.flow(samples,batch_size=1)
for i in range(9):
    plt.subplot(330+1+i)
    batch=it.next()
    image=batch[0].astype('uint8')
    plt.imshow(image)
plt.show()
```

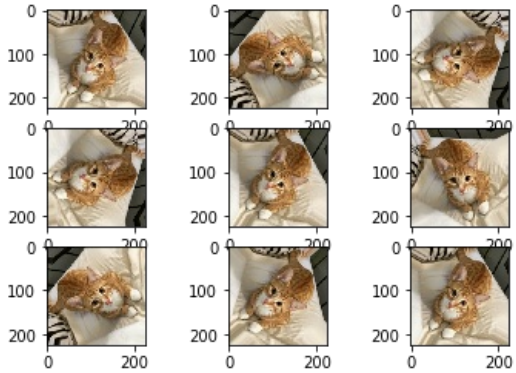


In [ ]:

```
ROTATION
```

In [7]:

```
img=load_img('/home/anudeep/Desktop/cat.jpeg')
data=img_to_array(img)
samples=expand_dims(data,0)
datagen=ImageDataGenerator(rotation_range=90)
it=datagen.flow(samples,batch_size=1)
for i in range(9):
    plt.subplot(330+1+i)
    batch=it.next()
    image=batch[0].astype('uint8')
    plt.imshow(image)
plt.show()
```

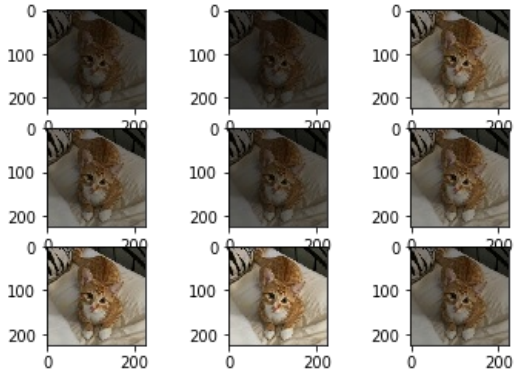


In [ ]:

```
Random Brightness Augmentation
Values less than 1.0 darken the image, e.g. [0.5, 1.0], whereas values larger than 1.0 brighten the image,
e.g. [1.0, 1.5],where 1.0 has no effect on brightness.
```

In [8]:

```
img=load_img('/home/anudeep/Desktop/cat.jpeg')
data=img_to_array(img)
samples=expand_dims(data,0)
datagen=ImageDataGenerator(brightness_range=[0.2,1.0])
it=datagen.flow(samples,batch_size=1)
for i in range(9):
    plt.subplot(330+1+i)
    batch=it.next()
    image=batch[0].astype('uint8')
    plt.imshow(image)
plt.show()
```

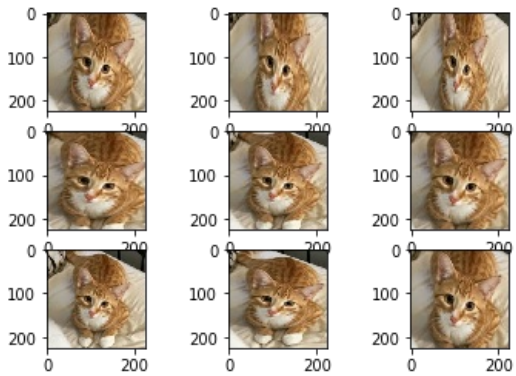


In [ ]:

```
Random Zoom Augmentation
```

In [11]:

```
img=load_img('/home/anudeep/Desktop/cat.jpeg')
data=img_to_array(img)
samples=expand_dims(data,0)
datagen=ImageDataGenerator(zoom_range=[0.5,1.0])
it=datagen.flow(samples,batch_size=1)
for i in range(9):
    plt.subplot(330+1+i)
    batch=it.next()
    image=batch[0].astype('uint8')
    plt.imshow(image)
plt.show()
```



In [ ]:

```
```