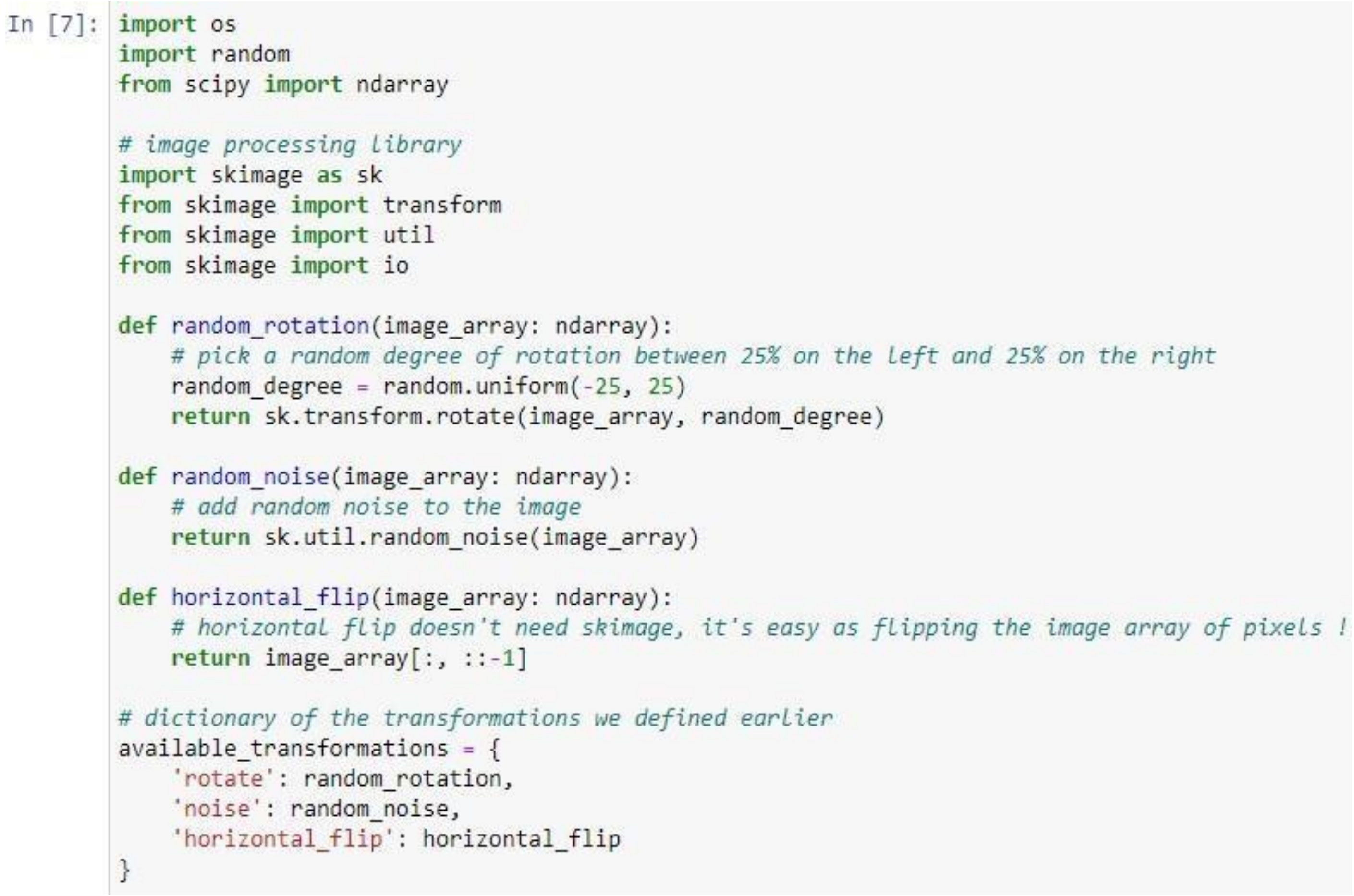
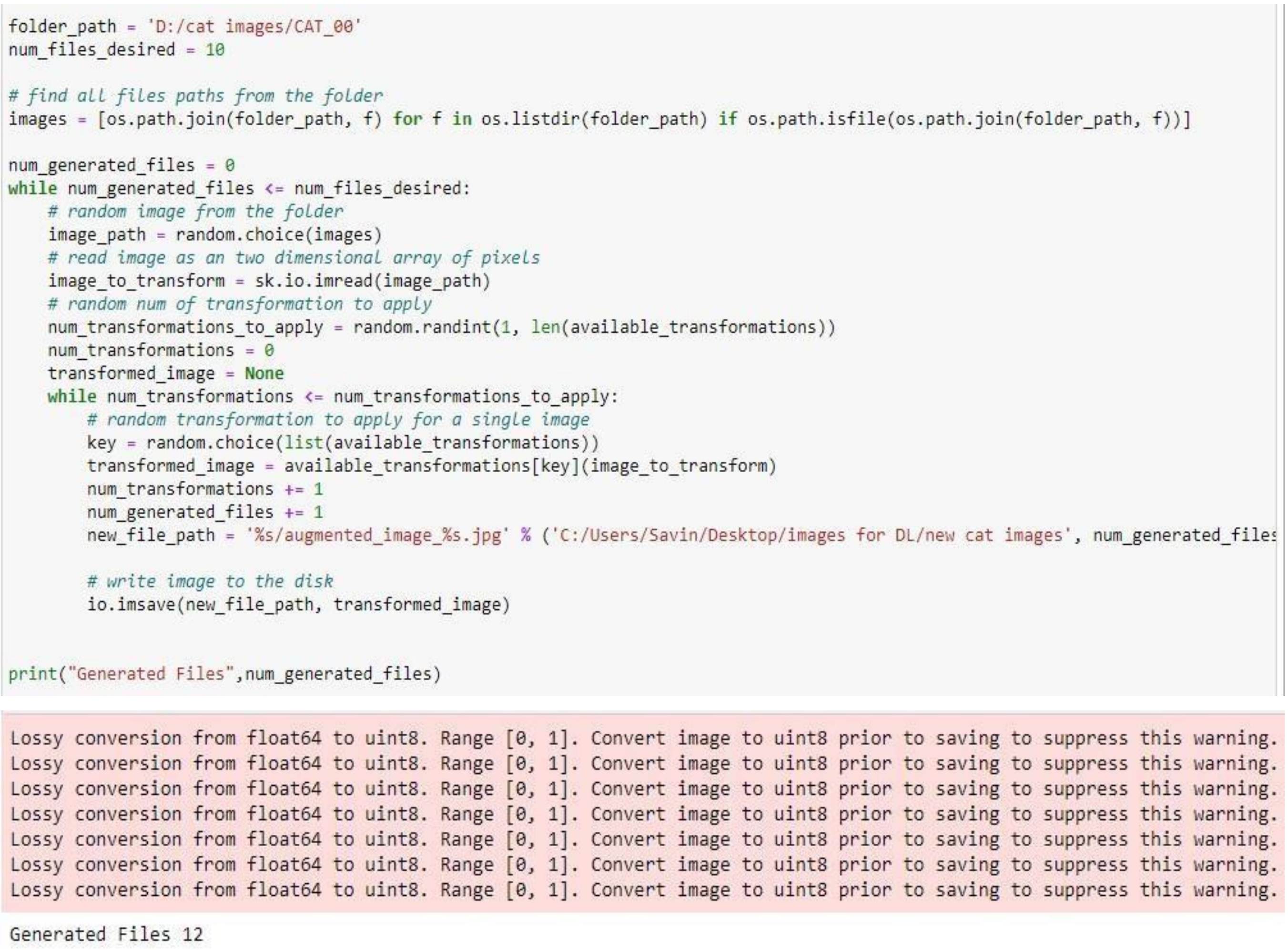
# NLP Algorithm - Image Transformation



In [7]:

```
import os
import random
from scipy import ndarray

# image processing library
import skimage as sk
from skimage import transform
from skimage import util
from skimage import io

def random_rotation(image_array: ndarray):
    # pick a random degree of rotation between 25% on the left and 25% on the right
    random_degree = random.uniform(-25, 25)
    return sk.transform.rotate(image_array, random_degree)

def random_noise(image_array: ndarray):
    # add random noise to the image
    return sk.util.random_noise(image_array)

def horizontal_flip(image_array: ndarray):
    # horizontal flip doesn't need skimage, it's easy as flipping the image array of pixels !
    return image_array[:, ::-1]

# dictionary of the transformations we defined earlier
available_transformations = {
    'rotate': random_rotation,
    'noise': random_noise,
    'horizontal_flip': horizontal_flip
}
```



```
folder_path = 'D:/cat images/CAT_00'
num_files_desired = 10

# find all files paths from the folder
images = [os.path.join(folder_path, f) for f in os.listdir(folder_path) if os.path.isfile(os.path.join(folder_path, f))]

num_generated_files = 0
while num_generated_files <= num_files_desired:
    # random image from the folder
    image_path = random.choice(images)
    # read image as an two dimensional array of pixels
    image_to_transform = sk.io.imread(image_path)
    # random num of transformation to apply
    num_transformations_to_apply = random.randint(1, len(available_transformations))
    num_transformations = 0
    transformed_image = None
    while num_transformations <= num_transformations_to_apply:
        # random transformation to apply for a single image
        key = random.choice(list(available_transformations))
        transformed_image = available_transformations[key](image_to_transform)
        num_transformations += 1
        num_generated_files += 1
        new_file_path = '%s/augmented_image_%s.jpg' % ('C:/Users/Savin/Desktop/images for DL/new cat images', num_generated_files

        # write image to the disk
        io.imsave(new_file_path, transformed_image)


print("Generated Files",num_generated_files)
```

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Lossy conversion from float64 to uint8. Range [0, 1]. Convert image to uint8 prior to saving to suppress this warning.
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Generated Files 12
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