Images Deblur

April 25, 2018

1 Deblur Images Using GANs

4.20.2018

2 Model has been trained and saved in *generator.h5*

See models: *model.py*
See loss functions: *losses.py*

```
In [1]: import numpy as np
        from PIL import Image
        from model import generator_model
        from utils import load_image, deprocess_image, preprocess_image
        ##load trained model
        g = generator_model()
        g.load_weights('generator.h5')
```

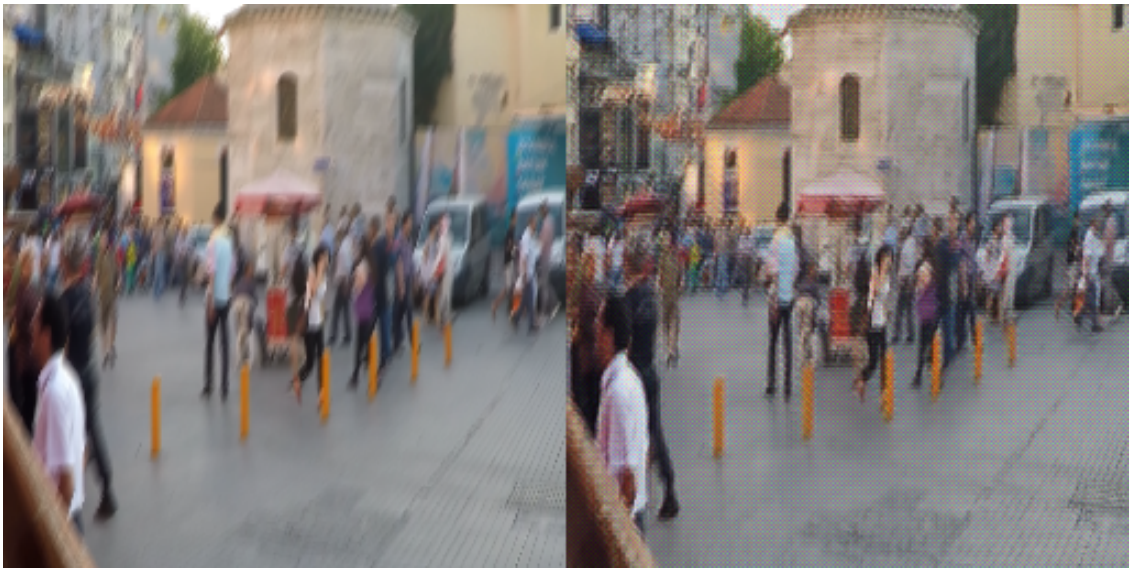
```
C:\ProgramData\Anaconda3\lib\site-packages\h5py\__init__.py:34: FutureWarning: Conversion of t
  from ._conv import register_converters as _register_converters
Using TensorFlow backend.
```

```
In [2]: def deblur_jupyter(image_path,g=g):
            data = {
                'A_paths': [image_path],
                'A': np.array([preprocess_image(load_image(image_path))])
            }
            x_test = data['A']
            generated_images = g.predict(x=x_test)
            generated = np.array([deprocess_image(img) for img in generated_images])
            x_test = deprocess_image(x_test)
            ##output image
            for i in range(generated_images.shape[0]):
                x = x_test[i, :, :, :]
                img = generated[i, :, :, :]
                output = np.concatenate((x,img), axis=1)
                im = Image.fromarray(output.astype(np.uint8))
                return(im)
```

2.1 Example1: An image from testing data

```
In [3]: image_path ='000001.png'
        deblur_jupyter(image_path)
```

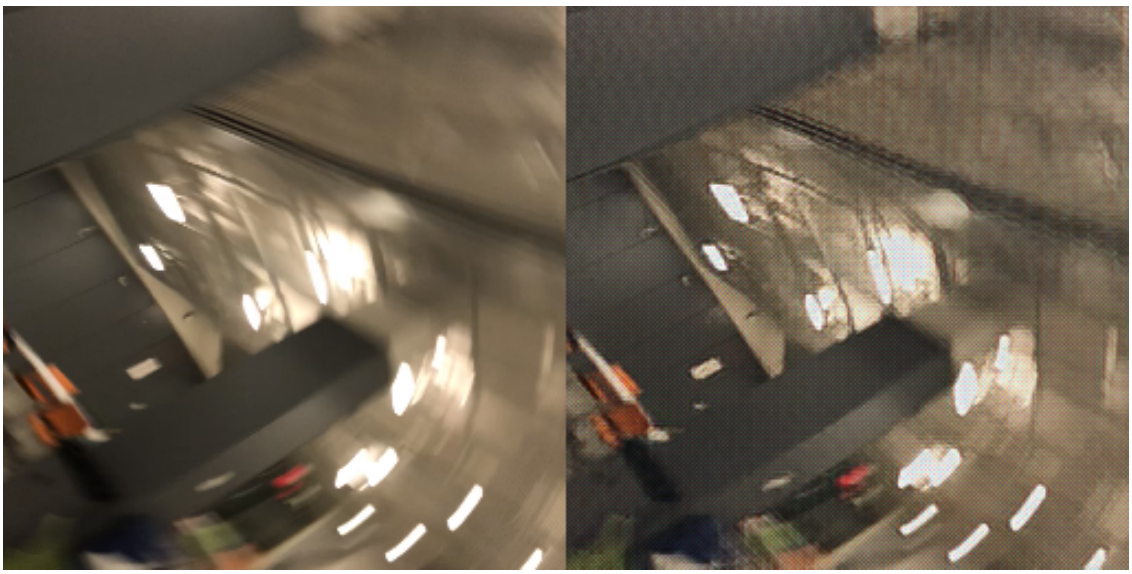
Out[3]:



3 Example2.1: An image shot by us

```
In [75]: image_path ='1609468865.jpg'
         deblur_jupyter(image_path)
```

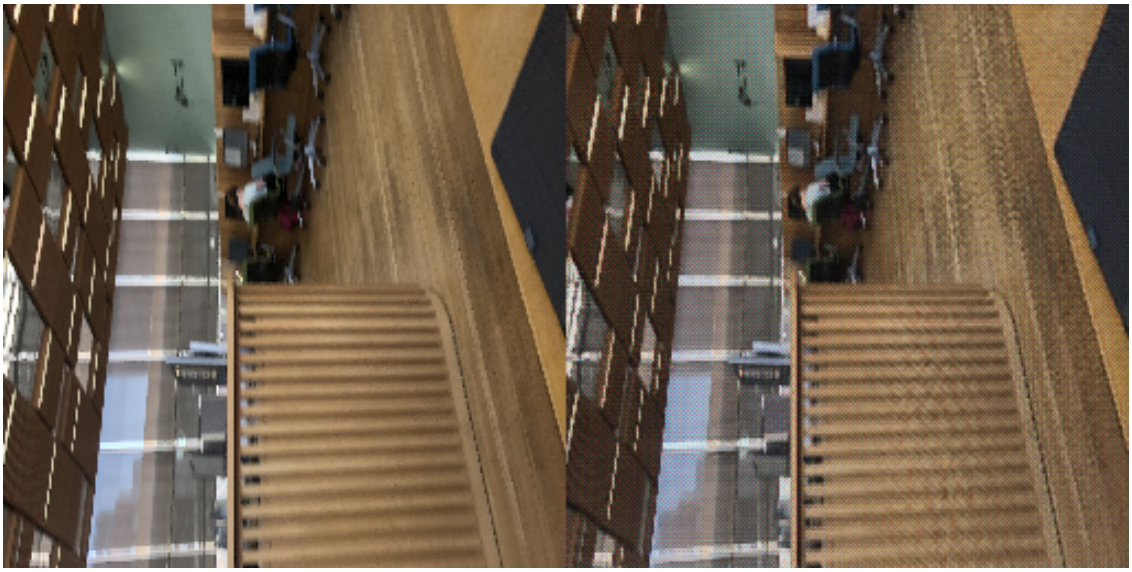
Out[75]:



3.1 Example2.2: An image shot by us

```
In [76]: image_path ='552113081.jpg'
         deblur_jupyter(image_path)
```

Out[76]:



It seems that our model has better performance when the image is more heavily blurred

3.2 Example3: A possible application: clinical images

```
In [77]: image_path ='378873104.jpg'
         deblur_jupyter(image_path)
```

Out[77]: