

# Final

September 13, 2020

[https://www.youtube.com/watch?v=2ZwYjY4\\_Wj0](https://www.youtube.com/watch?v=2ZwYjY4_Wj0)

## 0.0.1 Colab link to for ESRGAN

[https://colab.research.google.com/github/AhabbscienceStudioPak/ESRGAN/blob/master/ESRGAN\\_Colab.i](https://colab.research.google.com/github/AhabbscienceStudioPak/ESRGAN/blob/master/ESRGAN_Colab.i)

## 0.0.2 Steps use to enhance the image using ESRGAN:

- Use pretrained model of **ESRGAN** and pass image throgh it
- Brightened the image
- Sharpen the image
- Added Contrast to the image
- Test the output using OCR technique

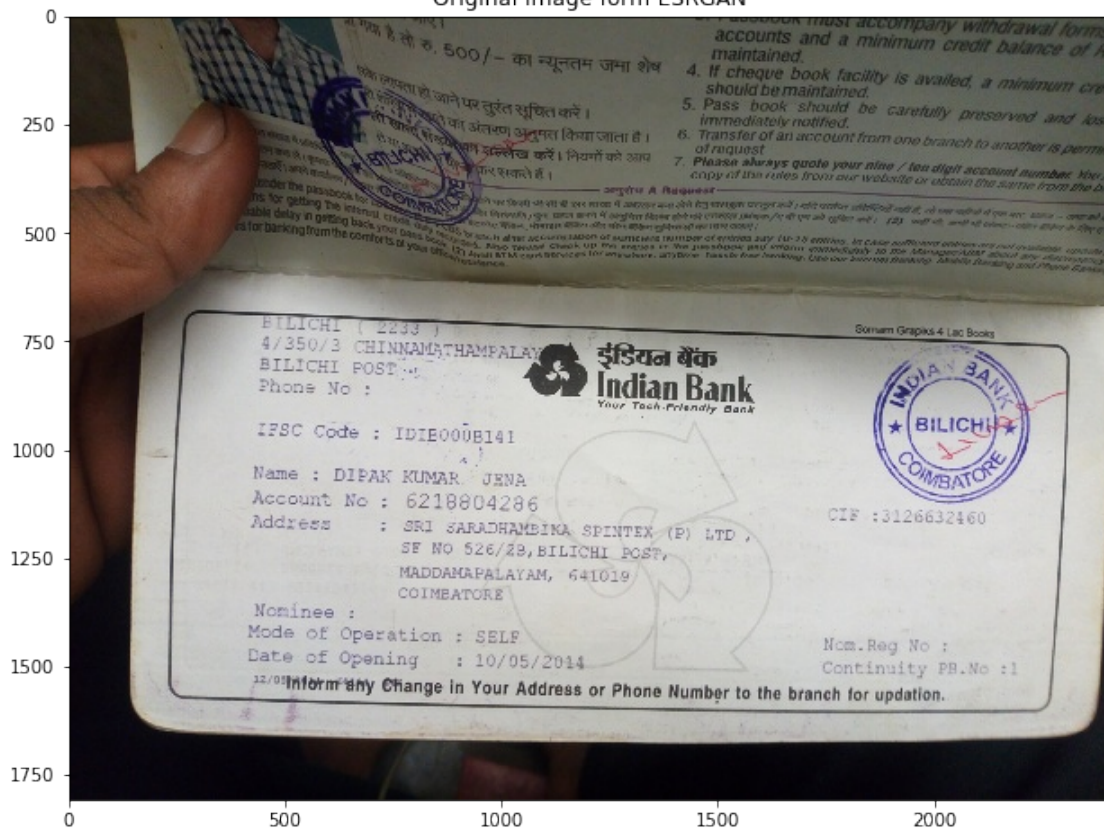
**Note :** Here PIL libraray has been used.

```
[6]: import cv2
import matplotlib.pyplot as plt
import numpy as np
from PIL import Image, ImageEnhance
```

## 0.0.3 Image from ESRGAN

```
[7]: plt.rcParams['figure.figsize'] = [12, 8]
image = cv2.imread('passbook_esrgan.png')
image = cv2.cvtColor(image, cv2.COLOR_BGR2RGB)
plt.imshow(image)
plt.title('Original Image form ESRGAN')
plt.show()
print(image.shape)
```

Original Image form ESGAN

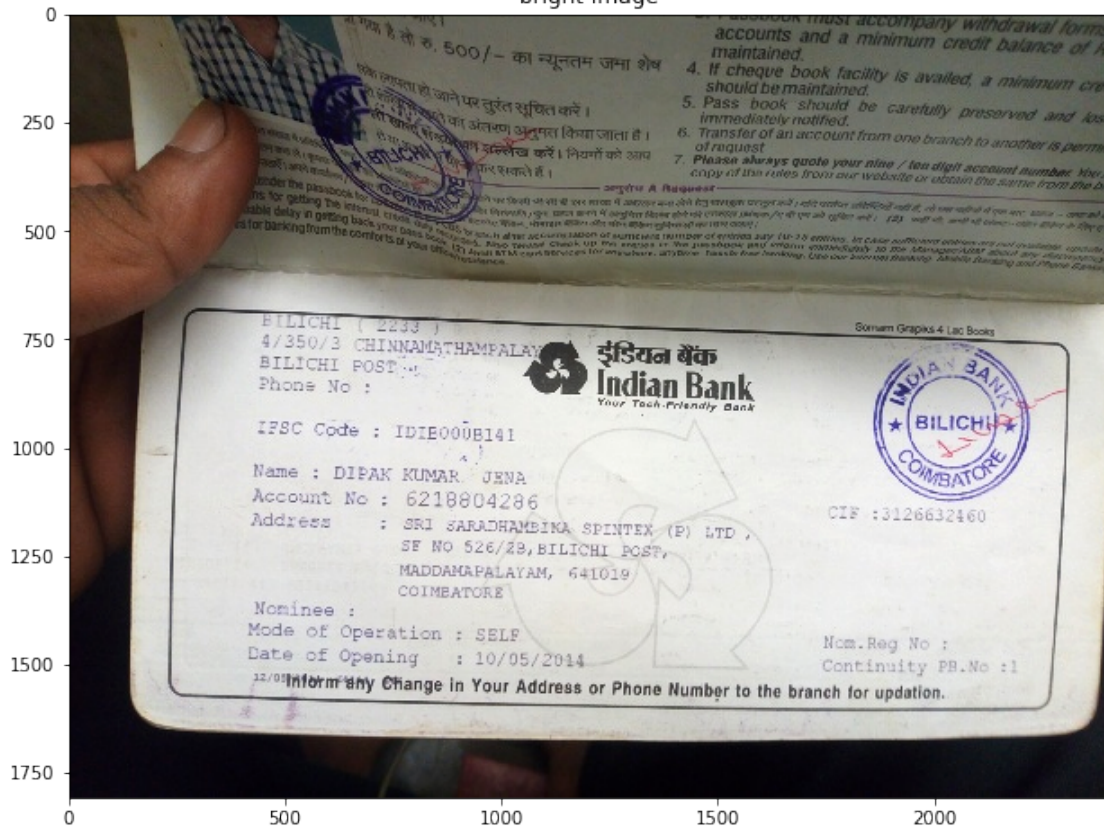


(1808, 2408, 3)

#### 0.0.4 Bright Image

```
[8]: from PIL import Image, ImageEnhance
im = Image.open("passbook_esrgan.png")
enhancer = ImageEnhance.Brightness(im)
bright = enhancer.enhance(1.1)
plt.imshow(bright)
plt.title('bright Image')
plt.show()
```

bright Image



### 0.0.5 Contrast Image

```
[9]: enhancer2 = ImageEnhance.Contrast(bright)
      contrast = enhancer2.enhance(1.3)
      plt.imshow(contrast)
      plt.title('contrast Image')
      plt.show()
```

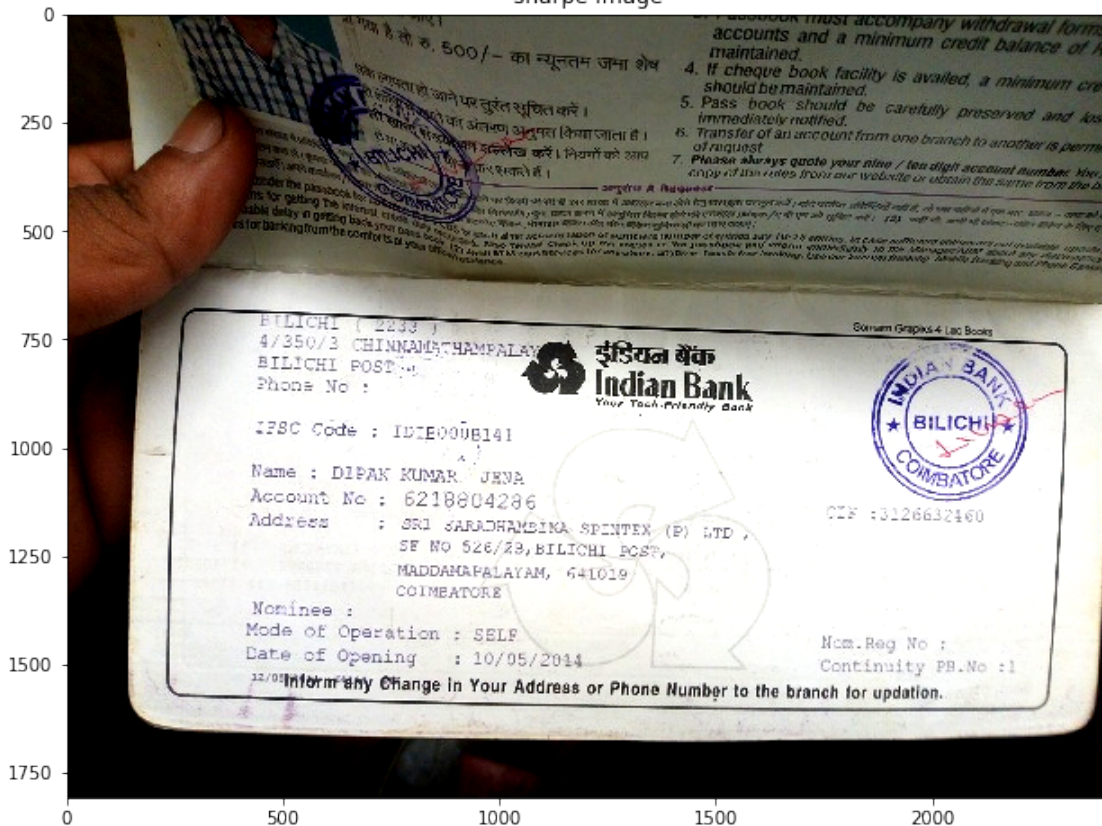


## 0.0.6 Sharpe Image

```
[10]: enhancer1 = ImageEnhance.Sharpness(contrast)
      sharpe = enhancer1.enhance(3.0)
      plt.imshow(sharpe)
      plt.title('sharpe Image')
      plt.show()
```



sharpe Image



## 0.0.7 Results from OCR Technique

```
[11]: import pytesseract
pytesseract.pytesseract.tesseract_cmd=r'E:/pytesseract/tesseract.exe'

[12]: text = pytesseract.image_to_string(sharpe)
print(text)
```

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#### 0.0.8 Steps use to enhance the image without using ESRGAN:

- Use original image
- Brightened the image
- Sharpen the image
- Added Contrast to the image
- Test the output using OCR technique

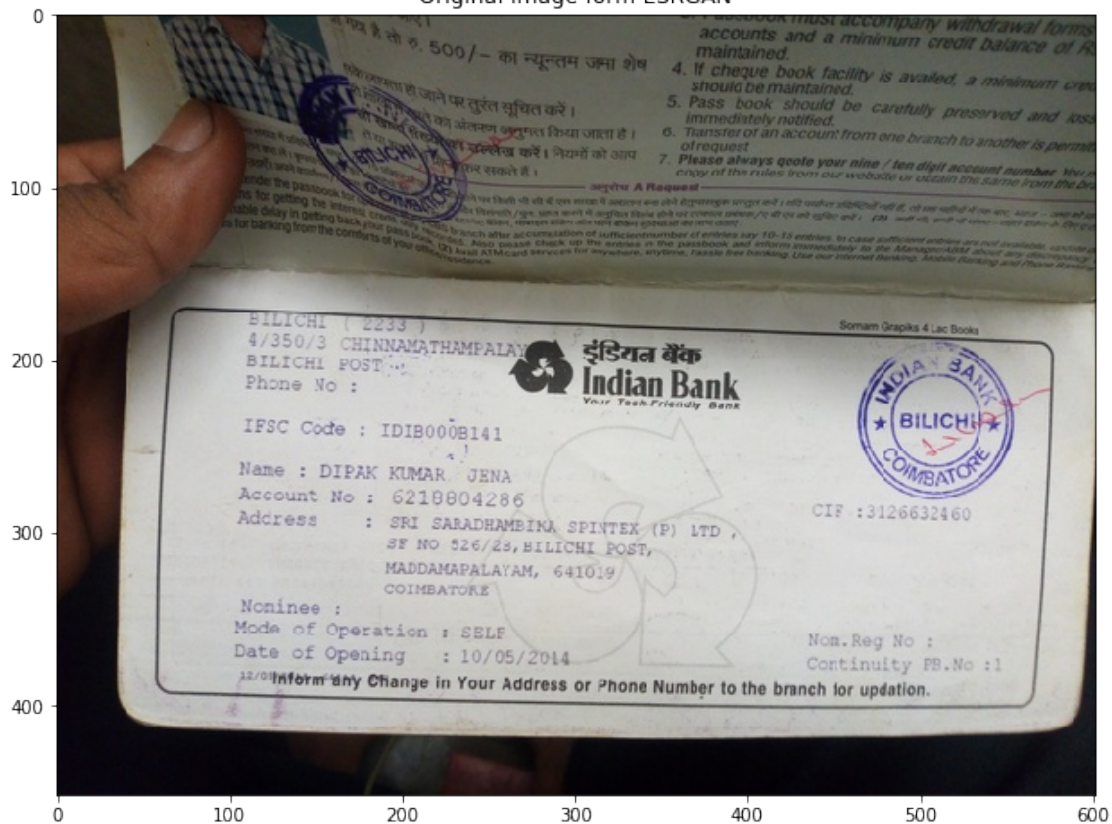
**Note :** Here PIL libraray has been used.

```
[13]: import cv2
import matplotlib.pyplot as plt
import numpy as np
from PIL import Image, ImageEnhance
```

#### 0.0.9 Original Image

```
[14]: plt.rcParams['figure.figsize'] = [12, 8]
image = cv2.imread('passbook.jpg')
image = cv2.cvtColor(image, cv2.COLOR_BGR2RGB)
plt.imshow(image)
plt.title('Original Image form ESRGAN')
plt.show()
print(image.shape)
```

Original Image form ESRGAN

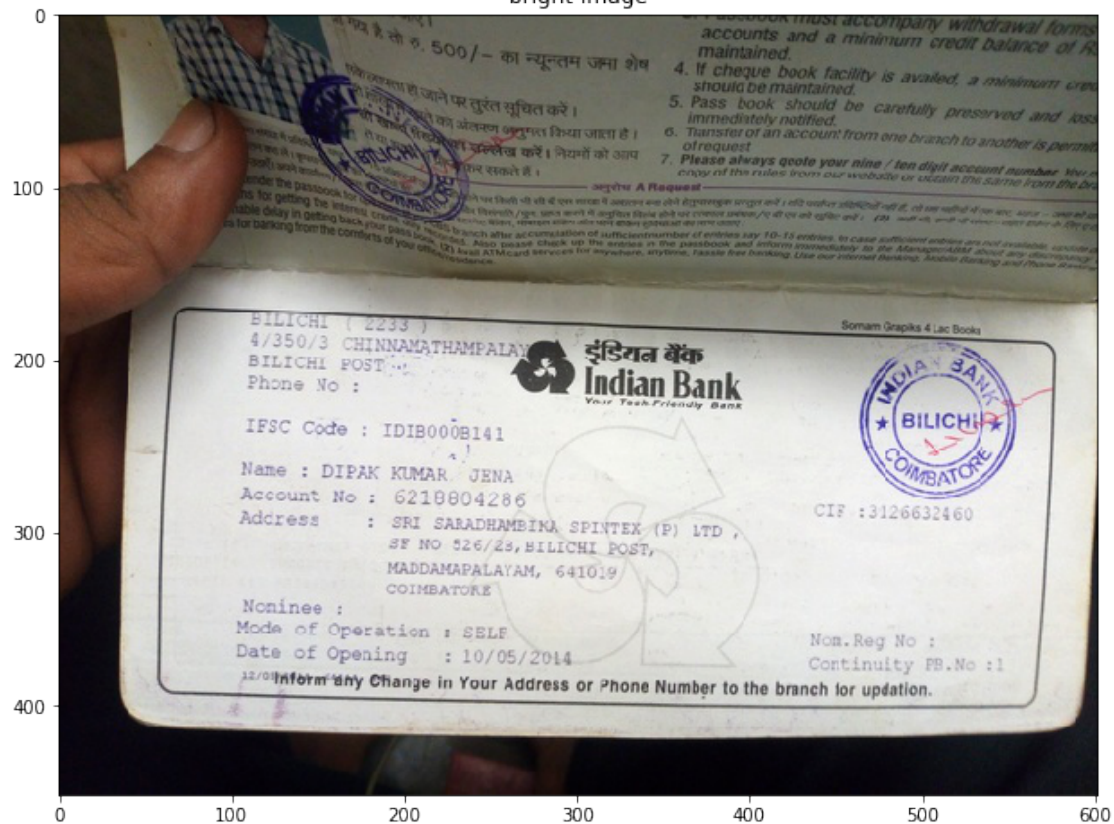


(452, 602, 3)

### 0.0.10 Bright Image

```
[15]: from PIL import Image, ImageEnhance
im = Image.open("passbook.jpg")
enhancer = ImageEnhance.Brightness(im)
bright = enhancer.enhance(1.1)
plt.imshow(bright)
plt.title('bright Image')
plt.show()
```

bright Image



### 0.0.11 Contrast Image

```
[16]: enhancer2 = ImageEnhance.Contrast(bright)
      contrast = enhancer2.enhance(1.3)
      plt.imshow(contrast)
      plt.title('contrast Image')
      plt.show()
```



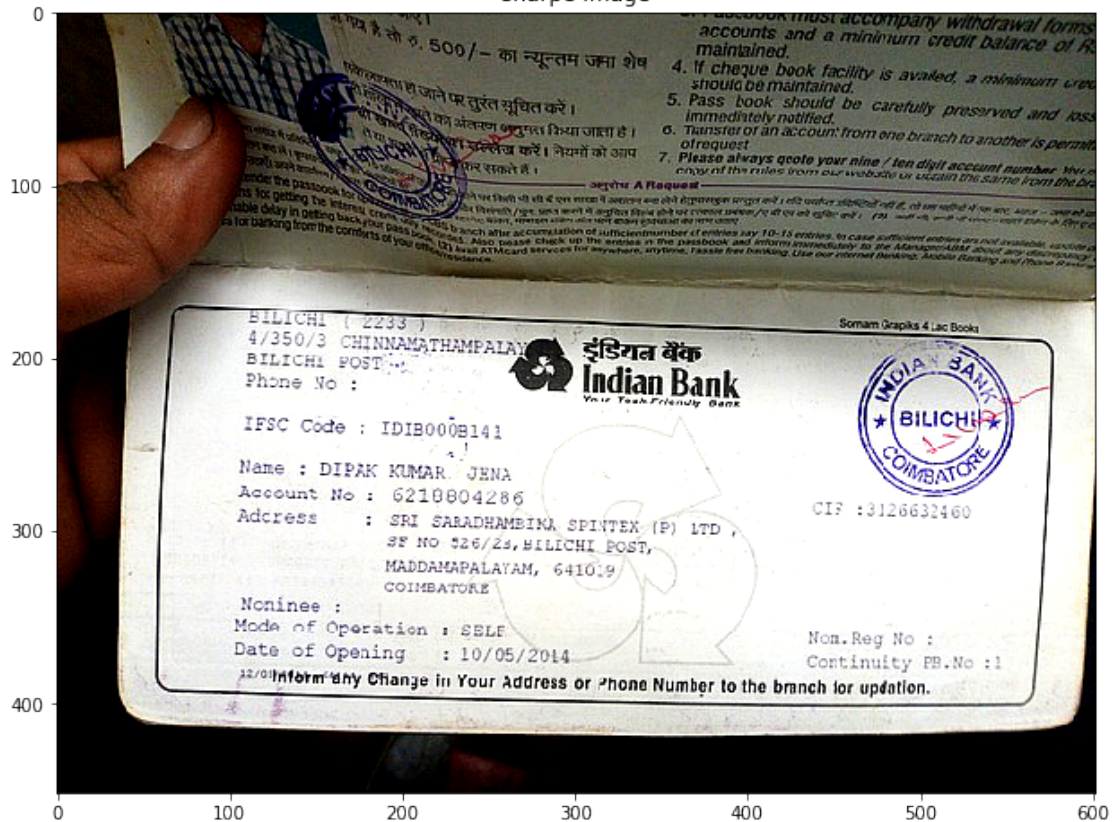
contrast Image



## 0.0.12 Sharpe Image

```
[17]: enhancer1 = ImageEnhance.Sharpness(contrast)
      sharpe = enhancer1.enhance(3.0)
      plt.imshow(sharpe)
      plt.title('sharpe Image')
      plt.show()
```

sharpe Image



### 0.0.13 Results from OCR Technique

```
[18]: text = pytesseract.image_to_string(sharpe)
      print(text)
```

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### 0.0.14 To check the brightness of an image

```
[20]: import sys
      from PIL import Image

      def calculate_brightness(image):
          greyscale_image = image.convert('L')
          histogram = greyscale_image.histogram()
```

```

pixels = sum(histogram)
brightness = scale = len(histogram)

for index in range(0, scale):
    ratio = histogram[index] / pixels
    brightness += ratio * (-scale + index)

return 1 if brightness == 255 else brightness / scale

if __name__ == '__main__':
    for file in sys.argv[1:]:
        image = Image.open('passbook_esrgan.png')
        print("%s\t%s" % (file, calculate_brightness(image)))

```

```

-f      0.5135893941861389
C:\Users\ajink\AppData\Roaming\jupyter\runtime\kernel-50cc1387-fe94-41d6-846e-b6
050cc7c0ee.json 0.5135893941861389

```

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### 0.0.15 OpenCV technique to Resize the image

```

[24]: image = cv2.imread("passbook.jpg")
stretch_near = cv2.resize(image, (512, 512),
                           interpolation = cv2.INTER_NEAREST)
plt.imshow(stretch_near)
plt.title('Resize Image')
plt.show()
print(image.shape)
print(stretch_near.shape)

```

Resize Image

0

100

200

300

400

500

0

100

200

300

400

500

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