- This is the code for denoising the image:

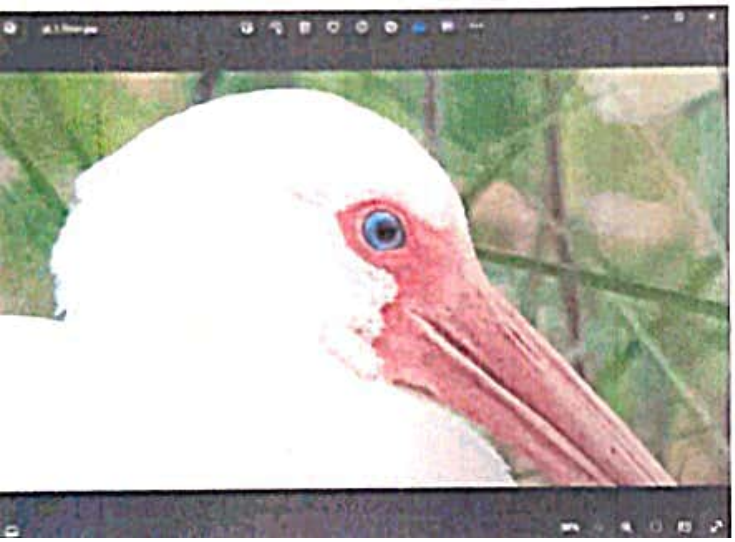
Welcome | image improvement.py 4 | improvement denoise 5 | image improved and sharp 5

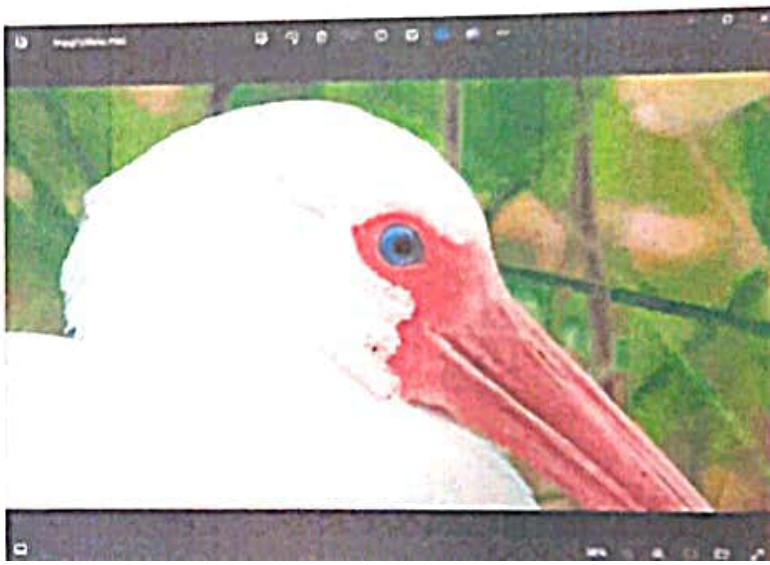
C: > Users > hp pc > Downloads > image improved and sharp > ...

```python
import cv2
from PIL import Image, ImageEnhance, ImageFilter

# Read the image
image_path = 'gt.jpg'
noisy_image = cv2.imread(image_path)

# Convert the image to grayscale
noisy_image_gray = cv2.cvtColor(noisy_image, cv2.COLOR_BGR2GRAY)

# Denoise the grayscale image
denoised_image_gray = cv2.fastNlMeansDenoising(noisy_image_gray, None, h=10, templateWindowSize=7, searchWindowSize=21)

# Denoise the colored image
denoised_image_color = cv2.fastNlMeansDenoisingColored(noisy_image, None, h=10, hColor=10, templateWindowSize=7, searchWindowSize=21)

# Convert the denoised image to PIL Image
denoised_pil_image = Image.fromarray(cv2.cvtColor(denoised_image_color, cv2.COLOR_BGR2RGB))

# Enhance the denoised image
```

```
19
20  # Enhance the denoised image
21  enhancer = ImageEnhance.Color(denoised_pil_image)
22  enhanced_image = enhancer.enhance(1.5)  # Increase color saturation by a factor of 1.5
23
24  # Enhance contrast
25  contrast_enhancer = ImageEnhance.Contrast(enhanced_image)
26  contrast_enhanced_image = contrast_enhancer.enhance(1.2)  # Increase contrast by a factor of 1.2
27
28  # Sharpen the image
29  sharpened_image = contrast_enhanced_image.filter(ImageFilter.SHARPEN)
30
31  # Show the sharpened image
32  sharpened_image.show()
```

MAGE AFTER IMPROVEMENT





DENOISED IMAGE

noisy image: gaussian noise with mea= 0.005 & var= 0.005

noisy image: gaussian noise with mea= 0.005 & var= 0.005