```
import cv2
import matplotlib.pyplot as plt
def compare imgs(img1, img2, title1, title2, figsize=(15, 15)):
    plt.figure(figsize=figsize)
    plt.subplot(121)
    plt.imshow(img1, cmap='gray')
    plt.title(title1)
    plt.axis('off')
    plt.subplot(122)
    plt.imshow(img2, cmap='gray')
    plt.title(title2)
    plt.axis('off')
```

In []: import numpy as np

Contrast Enchancement

```
In []: low_contrast_img = cv2.imread('assets/low_contrast.jpg')
    low_contrast_img = cv2.cvtColor(low_contrast_img, cv2.COLOR_BGR2GRAY)

In []: equalised_img = cv2.equalizeHist(low_contrast_img)

In []: compare_imgs(low_contrast_img, equalised_img, 'Low Contrast Image', 'Equalised Image')
```

Low Contrast Image



Equalised Image



Alter HSV

```
In []: leaves_img = cv2.imread('assets/leaves.jpg')
    leaves_img = cv2.cvtColor(leaves_img, cv2.COLOR_BGR2RGB)

In []: leaves_hsv = cv2.cvtColor(leaves_img, cv2.COLOR_RGB2HSV)
    leaves_hsv[..., 0] = (leaves_hsv[..., 0] + 50) % 180
    leaves_hue_adjusted = cv2.cvtColor(leaves_hsv, cv2.COLOR_HSV2RGB)
    compare_imgs(leaves_img, leaves_hue_adjusted, 'Original Image', 'Hue Adjusted Image')
```

Original Image



Hue Adjusted Image

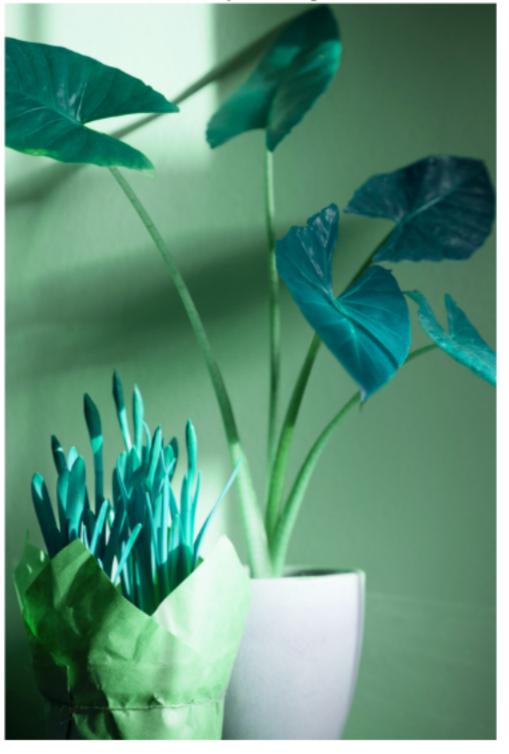


Image smoothening

```
In []: noisy_img = cv2.imread('assets/noisy.jpg')
    noisy_img = cv2.cvtColor(noisy_img, cv2.COLOR_BGR2RGB)

In []: # Gaussian Blur
    gaussian_blur = cv2.GaussianBlur(noisy_img, (15, 15), 0)
    compare_imgs(noisy_img, gaussian_blur, 'Original Image', 'Gaussian Blur')
```

Original Image



Gaussian Blur



Image Sharpening

```
In []: smooth_img = cv2.imread('assets/smooth.jpg')
    smooth_img = cv2.cvtColor(smooth_img, cv2.COLOR_BGR2RGB)

In []: kernel = np.array([
        [-1, -1, -1],
        [-1, 9, -1],
        [-1, -1, -1]
])
    sharpened_img = cv2.filter2D(smooth_img, -1, kernel)
    compare_imgs(smooth_img, sharpened_img, 'Original Image', 'Sharpened Image')
```



