

## Contrast Stretching

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In [1]: import numpy as np
        from PIL import Image
        import matplotlib.pyplot as plt
```

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In [2]: def contrast_stretching(input_image):
        img = input_image.resize((500,500), Image.Resampling.LANCZOS)
        #converitng it to array
        img_array = np.asarray(img)
        min = np.amin(img_array)
        print(min)
        max = np.amax(img_array)
        print(max)
        range = max-min
        row = 400
        column = 400

        array_b = np.zeros((row,column))
        array_b = (((img_array - min)/range)*255)
        min = np.amin(array_b)
        print(min)
        max = np.amax(array_b)
        print(max)
        final_image = Image.fromarray(array_b)
        final_image= final_image.convert("L")

        # set up side-by-side image display
        fig = plt.figure()
        fig.set_figheight(15)
        fig.set_figwidth(15)

        fig.add_subplot(2,2,1)
        plt.imshow(img, cmap='gray')

        #Plotting Histogram
        flat = img_array.flatten()
        fig.add_subplot(2,2,3)
        plt.hist(flat, bins=50)

        fig.add_subplot(2,2,2)
        plt.imshow(final_image, cmap='gray')

        #Plotting Histogram
        flat2 = array_b.flatten()
        fig.add_subplot(2,2,4)
        plt.hist(flat2, bins=50)

        return final_image
```

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In [3]: # reading image and converting to gray scale
        input_image = Image.open("../images/tiger.jpg").convert('L')
        a = contrast_stretching(input_image)
```

0  
251  
0.0  
255.0

