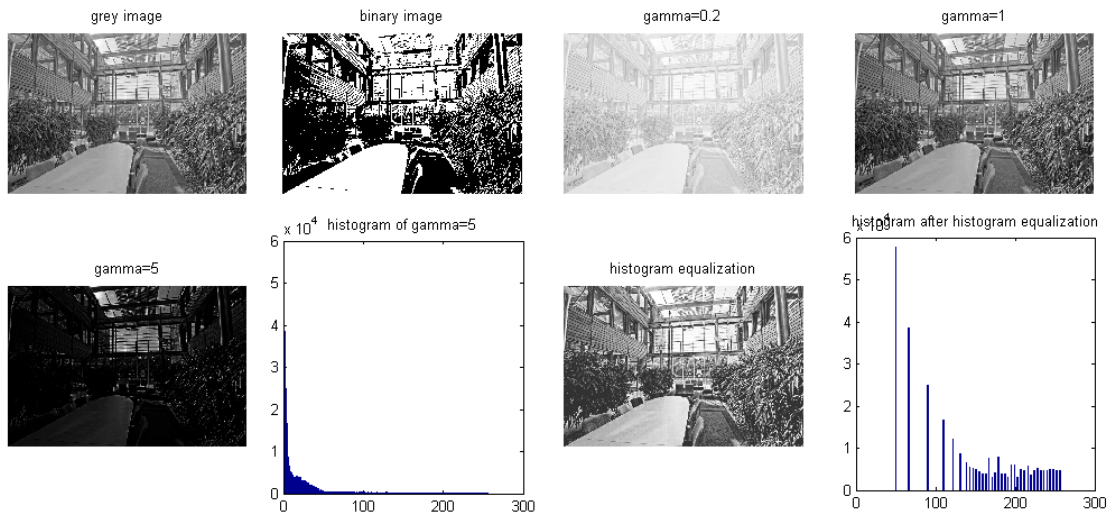


Introduction to Image Processing Lab2

Intensity Transform

In this lab, we will continue doing experiments in Matlab. Please try to finish the following exercises.

1. Read an image from disk (you can still use the image in lab 1) to the Matlab workspace. Convert it to a grey image and normalize its value to (0, 1). Set threshold=0.5 or any number you like, and then display the resulted binary image.
2. Perform gamma correction to the grey image. The transformation equation is $s = c * r^\gamma$, where r is the input intensity, s is the output intensity, c is a constant and is usually set to 1, γ is the parameter that you could change. Set $\gamma = 0.2$, $\gamma = 1$ and $\gamma = 5$, display and compare the different results.
3. Convert the value of the gamma corrected image (when $\gamma = 5$) to integer ranging from 0 to 255. Calculate and display its histogram. Perform histogram equalization to this image. Display the resulted image and the histogram of the resulted image.



Tips:

1. There are different types of data in Matlab, such as uint8, double, etc. When you use the `imshow` function to display an image, please pay attention to its data type. If it is double, then the value should range from 0 to 1; if it is uint8, then the value should range from 0 to 255.
2. There exists functions in Matlab that can directly compute the histogram of an image (`hist` or `histc`) or perform histogram equalization (`histeq`). You are suggested to try these functions first to see the results, but after that, we strongly encourage you to implement these algorithms by yourself.