

## Experiment No.: 02

**Experiment Name:** Experimental Analysis of Image Histogram and Image Enhancement Through Histogram Equalization Technique.

### Objectives:

- To know about different common image format.
- To know about different types of images.
- To know about image histogram analysis.
- To know image enhancement through histogram equalization.

### 1.1 Theory:

An image histogram is a type of histogram that acts as a graphical representation of the tonal distribution in a digital image. It plots the number of pixels for each tonal value. By looking at the histogram for a specific image a viewer will be able to judge the entire tonal distribution at a glance.

Histogram Equalization is a computer image processing technique used to improve contrast in images. It accomplishes this by effectively spreading out the most frequent intensity values.

### 1.2 Equipment:

- Computer
- MATLAB Software
- Images

### 1.3 Problems:

- i. Show the image histogram of an original image by using MATLAB command.
- ii. Histogram equalization image.
- iii. Histogram of histogram equalization image.

### Code:

```
clc;
clear;
I = imread('onion.png');
subplot(2,2,1)
imshow(I)
title('Original Image')

subplot(2,2,2)
imhist(I,64)
title('Histogram of Original Image')
```

```
J = histeq(I);
subplot(2,2,3)
imshow(J)
title('Equalized Image')

subplot(2,2,4)
imhist(J,64)
title('Histogram of Equalized Image')
```

## Output:

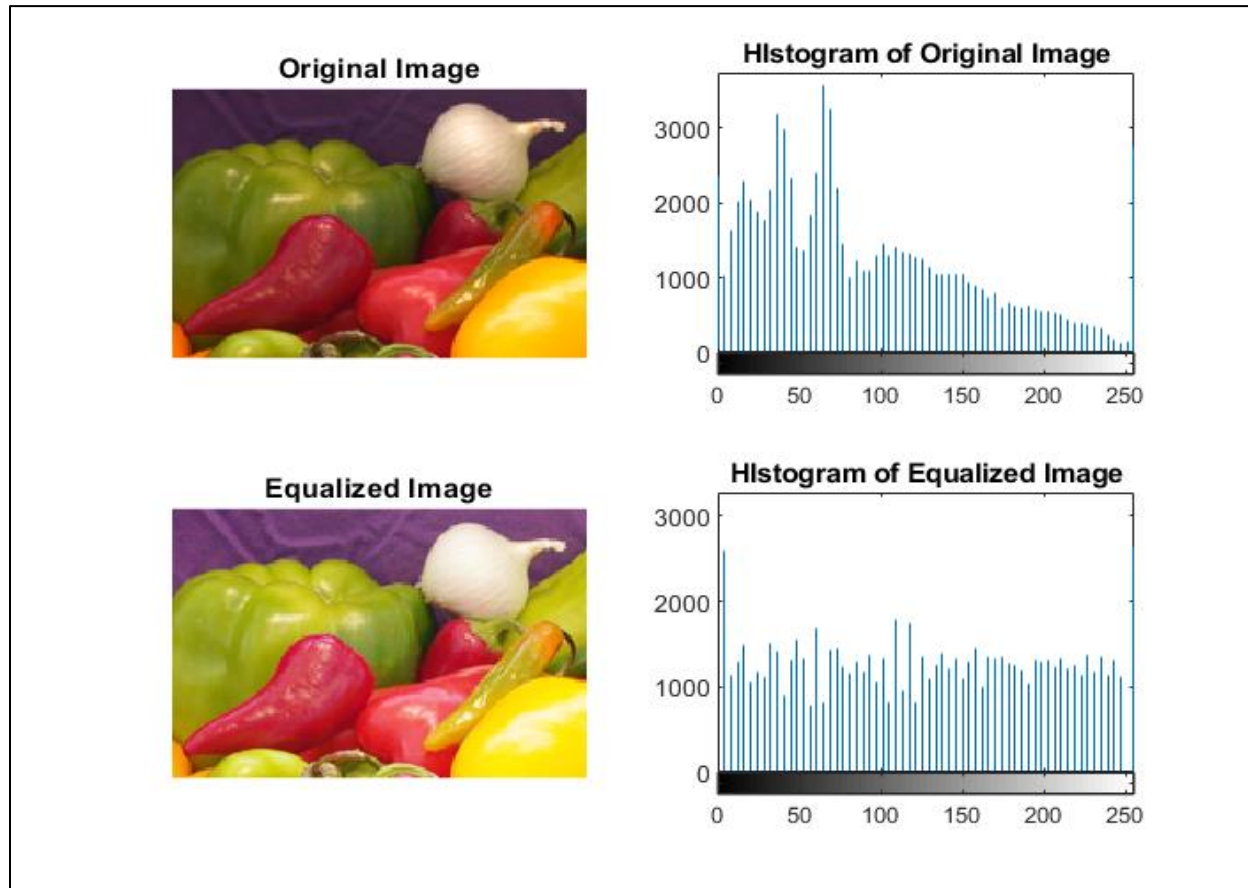


Fig 01: Histogram analysis and Histogram equalization of image using MATLAB built-in image (onion.png)

## 1.4 Discussion:

In this experiment, we have analyzed histogram of an image and also analyzed histogram of equalized image. First, we read an image from MATLAB built-in image and calculate its histogram using MATLAB function. Histograms are made up of bins, each bin representing a certain intensity value range. The histogram is computed by examining all pixels in the image and assigning each to a bin depending on the pixel intensity. The final value of a bin is the number of pixels assigned to it. Then we equalized the image and again we calculate the histogram of that equalized image. We can see there is a clear difference between two histogram graphs. As the bright intensity increased in image by equalization, the histogram points decreased and come to an average level. Both histogram graph was analyzed carefully, thus the experiment was done successfully.