QUIZ # 1
Digital Image Processing

Course: BESE 13 Time Allowed: 15 Mints
Name: _____ Max Marks: 10

(4)

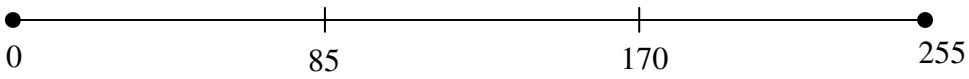
1. Consider an 8-bit image as follows**:**

12	17	21	235
90	75	88	25
242	175	240	170
178	165	250	85

Convert it to a 2-bit image.

Solution

With 2-bits we can represent 4 colors.



For each value in the original image, replace it with its nearest color i.e. one of 0, 85,170 or 255.

0	0	0	255
85	85	85	0
255	170	255	170
170	170	255	85

OR (To represent the values in 2 bits)

0	0	0	3
1	1	1	0
3	2	3	2
2	2	3	1

(2)

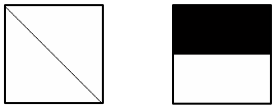
2. Once you have converted the 8-bit image in Question 1 to a 2-bit image, can you get back the original 8-bit image? If yes, how?

Solution

No it is not possible to get back the original image as once the data is converted to 2-bits there is no way to get back the original 8 bit numbers which generated the 2 bit numbers.

(2+2)

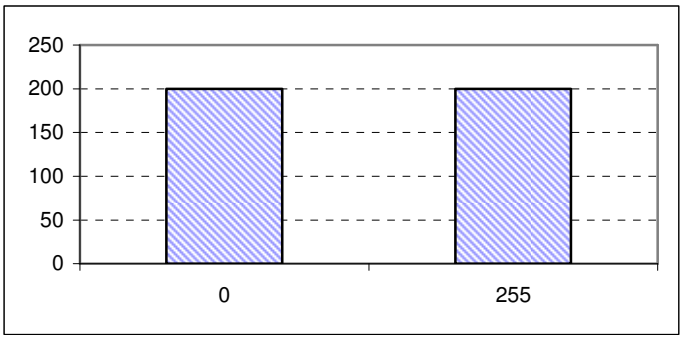
3. Consider the two 8-bit images in the following:



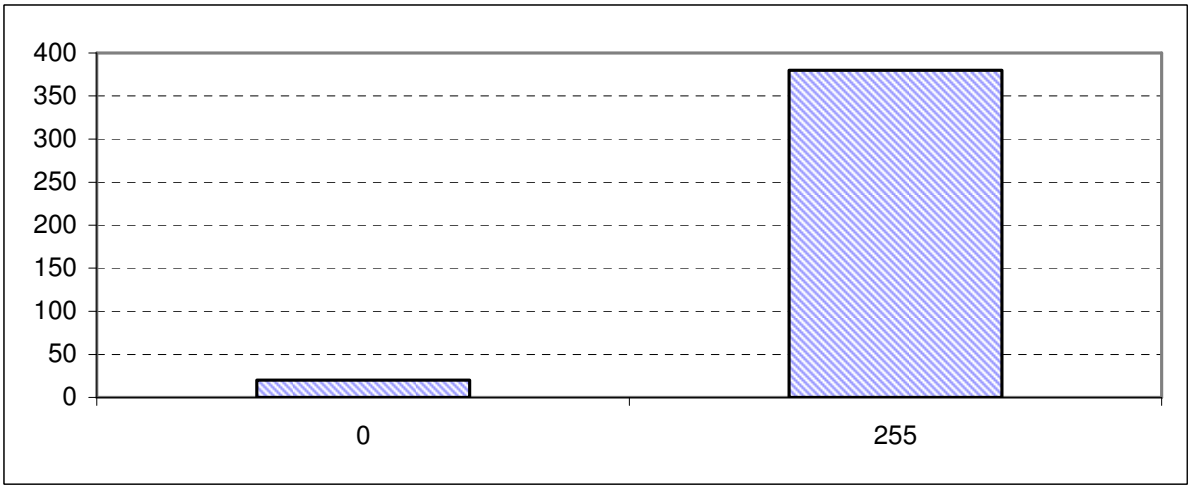
Solution

Each of these images has dimensions 20x20. Show the histograms of these images. Please note that the borders of the image shown in black is just to highlight its boundaries. It is not a part of the image.

Each image has a total of 400 pixels. Half of the pixels in the image to the right are black (0) while half are white (255). So the histogram would be:



The image on the left has its diagonal black (0) and rest every thing is white (255). This histogram will look like:



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