Image Processing
Labs 1

Bachelor in Computer Vision

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Image transformations

Problem 1

Considering the following image, calculate the size of that image and knowing that the maximum corresponds to a white pixel and the minimum to a black pixel gives the number of bit used for that image.

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
R1	0	1	3	5	7	7	6	4	2	1
R2	0	1	3	5	7	7	6	4	2	1
R3	0	1	3	5	7	7	6	4	2	1
R4	0	1	3	5	7	7	6	4	2	1
R5	0	1	3	5	7	7	6	4	2	1
R6	0	1	3	5	7	7	6	4	2	1
R7	0	1	3	5	7	7	6	4	2	1
R8	0	1	3	5	7	7	6	4	2	1
R9	0	1	3	5	7	7	6	4	2	1
R10	0	1	3	5	7	7	6	4	2	1

Figure 1: Input image

Problem 2

Apply that gray level transformation on the previous image.

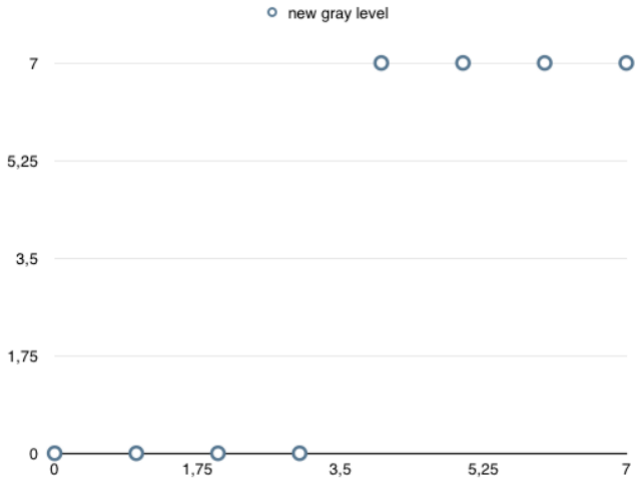

Figure 2: Input image

Result :

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
R1										
R2										
R3										
R4										
R5										
R6										
R7										
R8										
R9										
R10										

Figure 3: Input image

Problem 3

Apply that gray level transformation on the previous image.

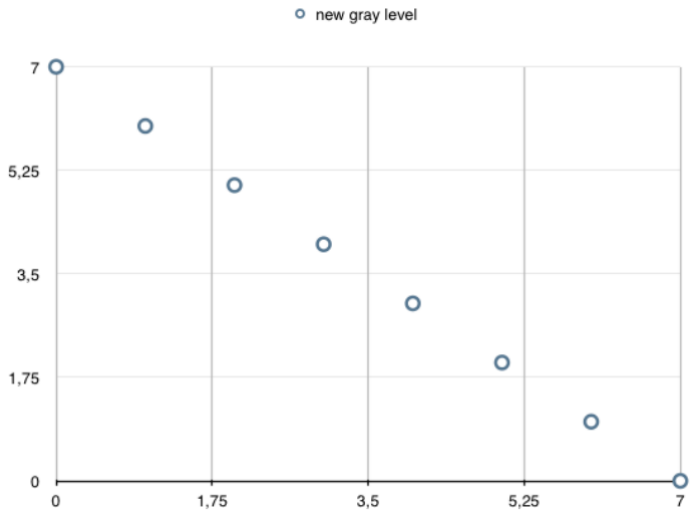

Figure 4: Input image

Result :

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
R1										
R2										
R3										
R4										
R5										
R6										
R7										
R8										
R9										
R10										

Figure 5: Input image

Problem 4

Gives the histogram of the first image.
Calculate the cumulative distribution function.
Apply it to modify the gray levels of the image if we suppose a 8 bits coded image (as input and output).

Result

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
R1										
R2										
R3										
R4										
R5										
R6										
R7										
R8										
R9										
R10										

Figure 6: Input image