Computer Vision

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1. Perform histogram equalization by considering 5x5 image given below with integer intensities in the range between one and eight :-

1	8	4	3	4
1	1	1	7	8
8	8	3	3	1
2	2	1	5	2
1	1	8	5	2

2. Perform histogram equalization for the 8x8, 8-level image described in the following table :-

Gray Level (r_k)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
No of Pixels(n_k)	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**

3. Perform histogram equalization by considering 8x8 image given below with integer intensities in the range between one and eight :-

0	1	7	4	3	4	4	5
0	1	1	1	7	5	4	6
0	5	5	1	5	1	4	6
0	2	2	1	5	2	4	6
0	1	1	5	5	2	4	6
0	5	5	4	3	5	4	1
0	2	2	5	5	2	4	2
0	5	5	4	5	2	4	2

4. Suppose that a 3-bit image ($L=2^3=8$) of size 64 × 64 pixels (MN = 4096) has the intensity distribution shown in following table. Calculate the histogram equalization transformation function

Gray Level (r_k)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
No of Pixels(n_k)	**790**	**1023**	**850**	**656**	**329**	**245**	**122**	**81**

5. Perform histogram equalization on the following 3x3, 8-level image :-

1	3	5
4	4	3
5	2	2

6. Apply the histogram equalization to the following image :-

1	2	3	4
5	5	6	6
6	7	6	6
6	7	2	3

7. Perform histogram specification on the 8x8, 8-level image described in the table:

Table 1: Original image

Gray Level (r_k)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
No of Pixels(n_k)	**790**	**1023**	**850**	**656**	**329**	**245**	**122**	**81**

The target histogram is as shown in table

Table 2: Desired image

Gray Level (r_k)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
No of Pixels(n_k)	**0**	**0**	**0**	**614**	**819**	**1230**	**819**	**614**

8. Perform histogram specification on the 8x8, 8-level image described in the table:

Table 1: Pixel Distribution of the image

Gray Level (r_k)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
No of Pixels(n_k)	**8**	**10**	**10**	**2**	**12**	**16**	**4**	**2**

The target histogram is as shown in table

Table 2: Pixel Distribution of the image

Gray Level (r_k)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
No of Pixels(n_k)	**0**	**0**	**0**	**0**	**20**	**20**	**16**	**8**

9. Apply the histogram specification to the image given here. Assume the target given in table. Show the resultant final mapping.

1	3	4	5
5	6	6	6
7	7	7	7
5	5	5	5

Table: Pixel Distribution of the image

Gray Level (r_k)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
No of Pixels(n_k)	**0**	**0**	**0**	**0**	**20**	**20**	**16**	**8**

10. Apply the histogram specification to the image given here. Assume the target given in table. Show the resultant final mapping.

1	3	4	5
5	6	6	6
7	7	7	7
5	5	5	5

Gray Level (r_k)	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Target Mapping(S)	**0**	**0**	**1**	**2**	**2**	**3**	**6**	**7**