Cairo University
Faculty of Computers & Information Technology
Department
Year 2020 – 2021

Digital Image Processing

Sheet-1

Histogram Analysis Contrast stretching

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1. Lab Experiments

1. **Experiment-1:**

   -Plot the corresponding image histogram

   -Histogram shift by value

   - Plot the cumulative image histogram

   -Perform histogram equalization

      -Plot modified image

      -Plot modified image histogram

      -Plot modified image cumulative histogram.

2. **Experiment-2[Python-Code]:**

   - Take image as an input

   - Read Image pixels

   - Take the new contrast range EX.[0,7]

   - Apply contrast stretching on image pixels

   - Display the new image

3. **Given the image:** ***consider Dynamic Range[0-7] ignore pixel 8***

2	7	5	4	7	3	2
8	2	5	4	3	6	1
4	3	2	5	0	4	3
4	3	7	1	2	5	7
3	2	5	4	3	2	5
5	8	4	3	2	5	4
6	3	1	7	6	1	2

Perform the following:

a. Draw the histogram of the image
b. Draw the cumulative histogram
c. Perform Histogram equalization
d. **Truncate about 10% of the image from the dark region, and also truncate about 20% of the image from the light region. And hence, perform contrast stretching operation to use the full dynamic range [0-7](Submitted next week)**

4. **Given the image**

3	4	6
4	5	6
2	3	5

Modify its dynamic range to fit a display of eight grey levels.

5. **Modify the histogram of the following image into a uniformly distributed histogram in the interval [0,7] (Submitted next week)**

2	**3**	**3**	**0**	**0**
4	**0**	**5**	**6**	**3**
6	**6**	**6**	**5**	**0**
3	**0**	**1**	**1**	**2**
2	**4**	**1**	**2**	**1**