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COMP 478 Assignment 1

1.

a) The discrete histogram equalization uses a finite set of numbers, which are integers as well to approximate a PDF through a discrete sum as opposed to its continuous counterpart that uses an integral instead. Though an input intensity of a pixel would be mapped to a new output intensity, the probability of the new intensity would be roughly equal to the probability of the input intensity. In other words, the equalized histogram would not be flat, but would have its pixels spread uniformly across all intensity levels.

b) A histogram-equalized image would have its pixels spread uniformly across all intensity levels. Doing a second pass would only yield a linear transformation as the input image is already histogram-equalized. In other words, there would be no change in intensity.

2.

3.

a) Chart

Description automatically generated

b)

i)

We can find s­­k using this formula: sk = with given values:

Table

Description automatically generated

Yields:

Graphical user interface, application, table

Description automatically generated

ii)

Chart, histogram

Description automatically generated

Chart

Description automatically generated

c)

Chart

Description automatically generated