

1 Pre-Recorded Tasks

1.1 Histograms

The following matrix of pixel values is given:

$$\mathbf{X} = \begin{bmatrix} 10 & 9 & 20 & 20 \\ 8 & 9 & 10 & 20 \\ 8 & 8 & 9 & 30 \\ 8 & 8 & 10 & 30 \end{bmatrix}$$



1. Manually create the histogram of this picture!
2. Now, draw the histogram with a bin size of 10 and the center of the bins at 0, 10, 20,... !

2 Self-Study Matlab Tasks

2.1 Setup

Create a folder `~/Ex2/` in your home directory. **Write all your functions and scripts as MATLAB files and put them in this directory.** Some auxiliary files can be found in the shared directory `~/SHARED_FILES/vcc/Ex2/`. Copy these files to your directory!

2.2 Digital images

1. Load the image `shapes.png` into your MATLAB workspace using the `imread` function.
2. Split the loaded image into its color channels and store them in different variables. Take a look at the different channels using the `imshow` function. What do you notice?

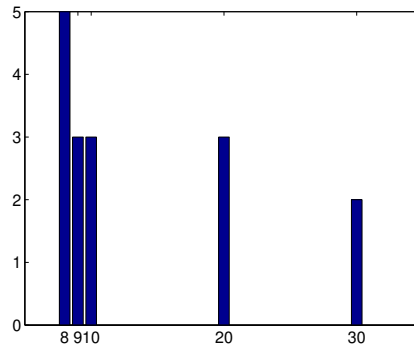
2.3 Histogram Equalization

1. Load the images `shed_2.png` and `shed_3.png` into the Matlab workspace. Convert the images into gray-scale, using the `rgb2gray` function.
2. Plot the histograms of the converted images and compare them. What can you observe from the histograms?
Hint: The function `histogram` might be useful
3. Perform a histogram equalization on gray-scale version of the image `shed_2.png` using the `histeq` function. Show the equalized image and histogram, compare it to the original one. What do you observe?
4. Now perform a histogram equalization **without** using the `histeq` function.
Hint: Script, page 1-17 might be useful

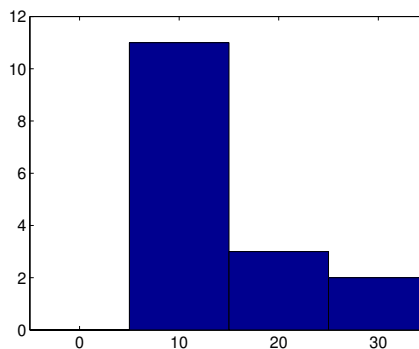
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