KENNETH A ESDAILE

Homework 1

CSCI 381/780 Image Processing

Queens College Department of Computer Science **Due Date: May 12th**

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QUESTION 1. Capture two images, that will be used for processing, (one underexposed, and one overexposed) using your cell phone or digital camera and generate their corresponding gray level images

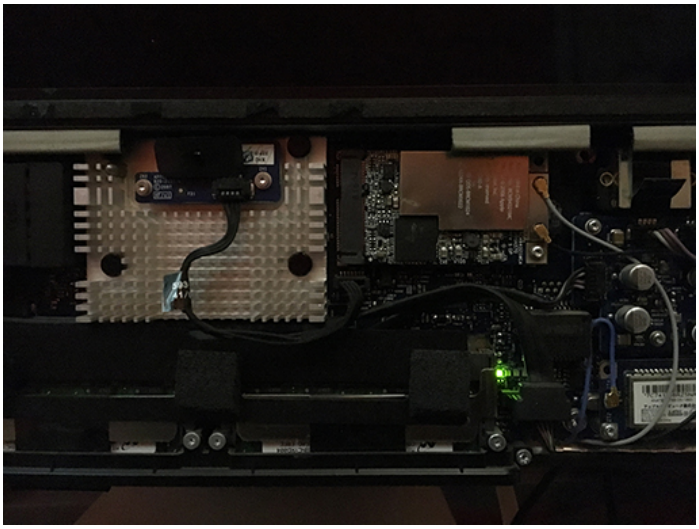


Image-1 underexposed color image

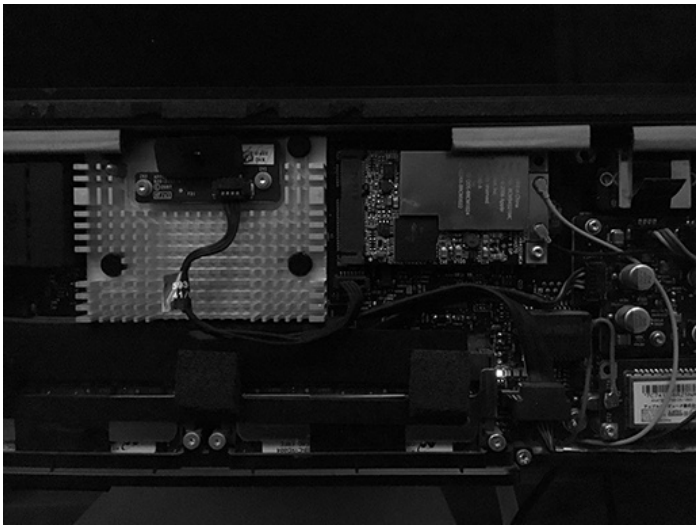
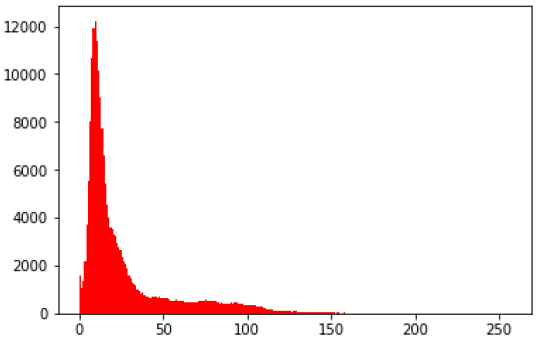


Image-1 underexposed gray image



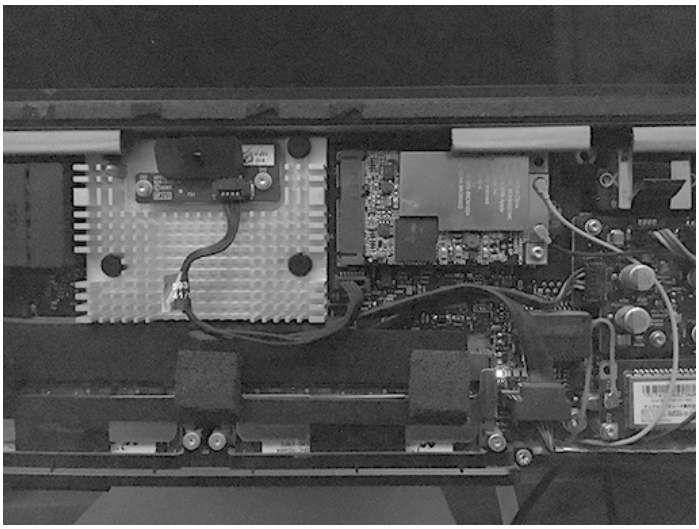


Image-1 underexposed gray image with a gamma value 2.2

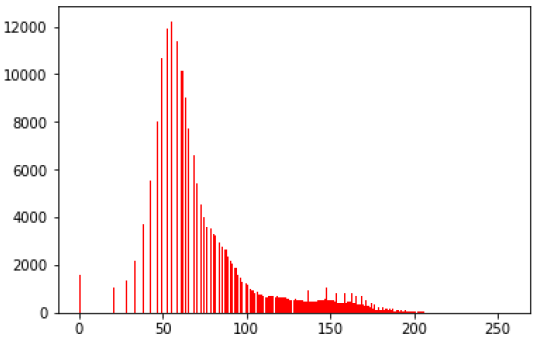


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Image-2 overexposed color image

Image-2 overexposed gray image and

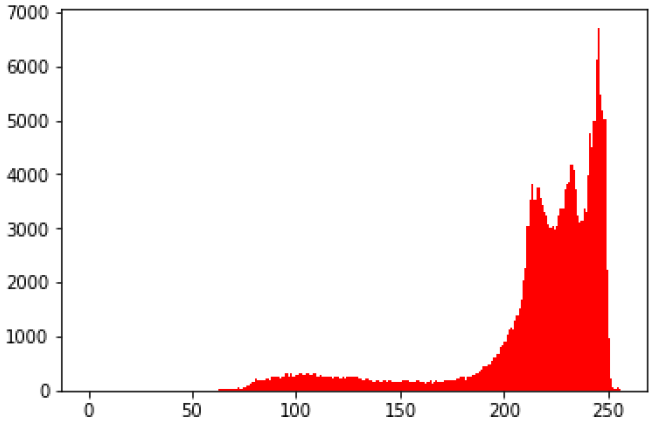
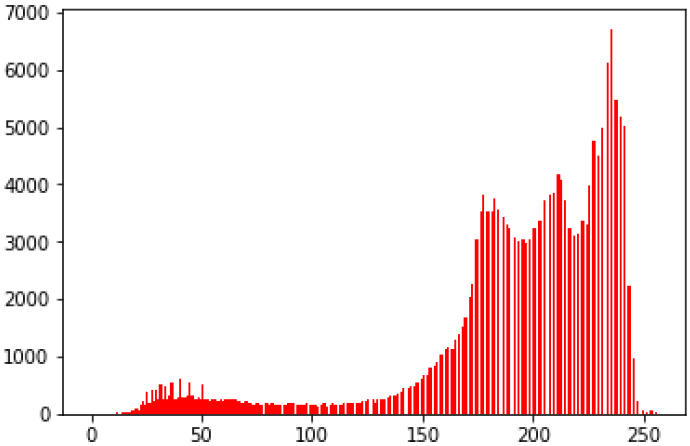


Image-2 overexposed gray image with a gamma value of 0.5



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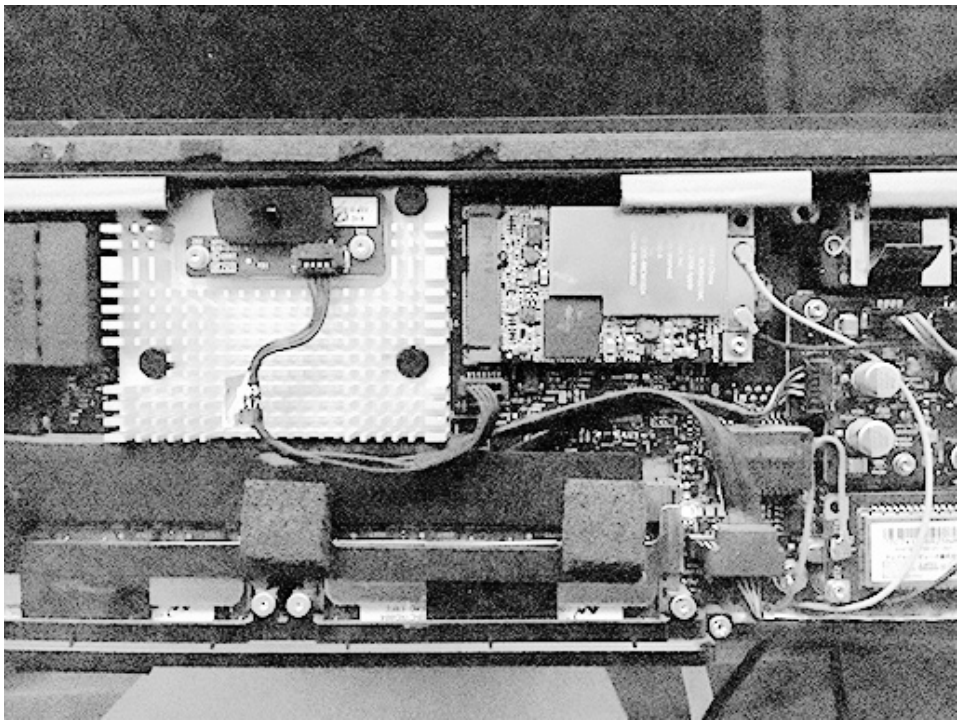
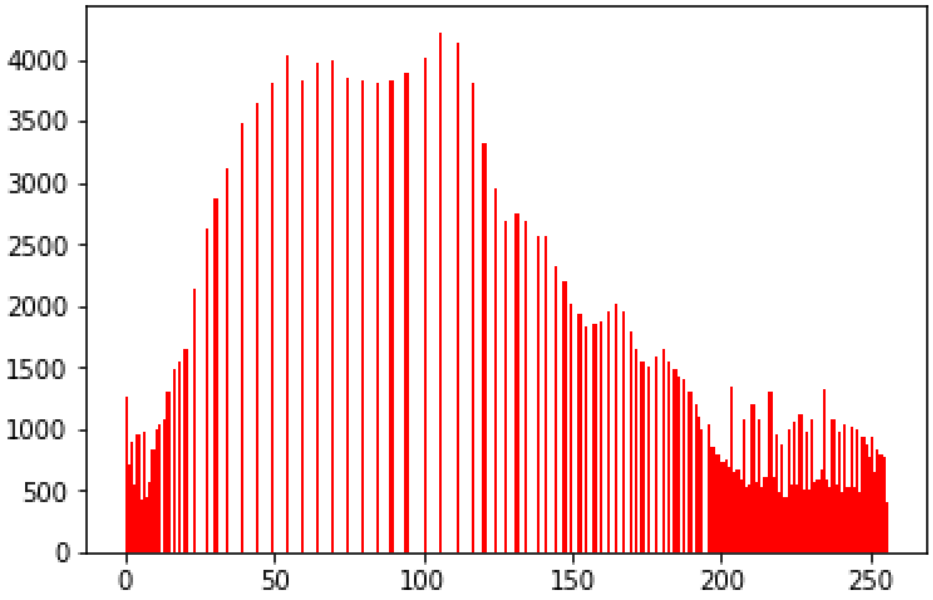
QUESTION 2. Apply Histogram equalization to the two images captured previously. You can use build- in functions. Show resulting images and their histograms.

Applying Histogram equalization to Image-1



Histogram of the above image



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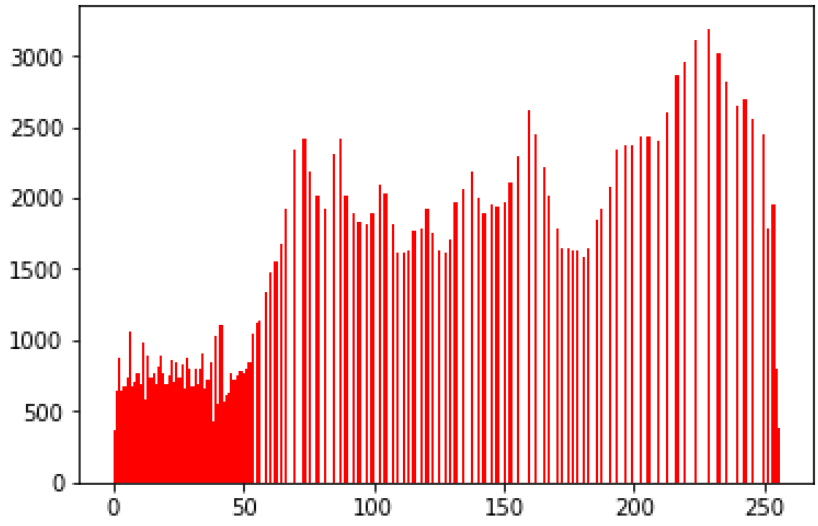
Applying Histogram equalization to Image-2

Histogram of the above image



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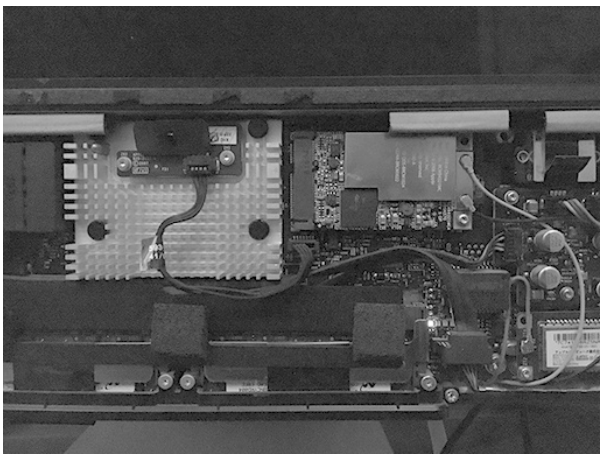
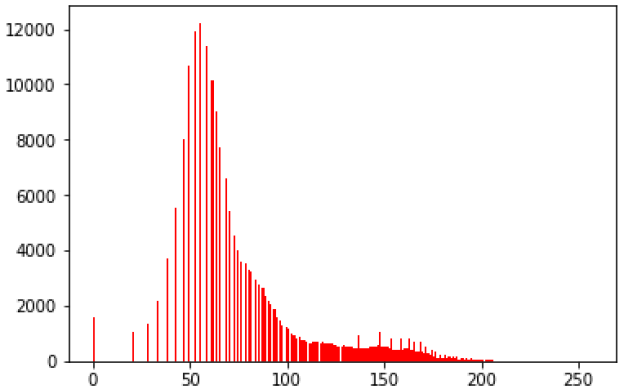
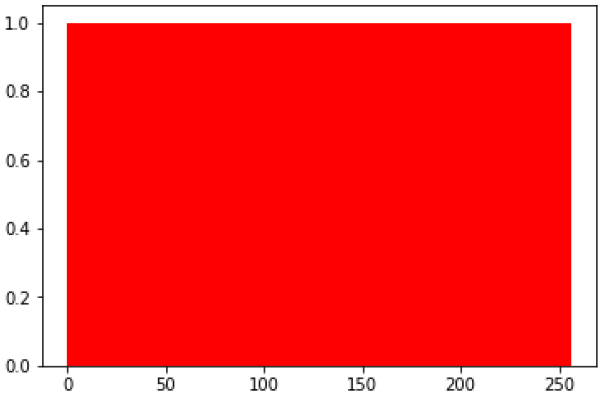
QUESTION 3. Implement the algorithm of exact histogram matching using the following kernels

Input image and it histogram

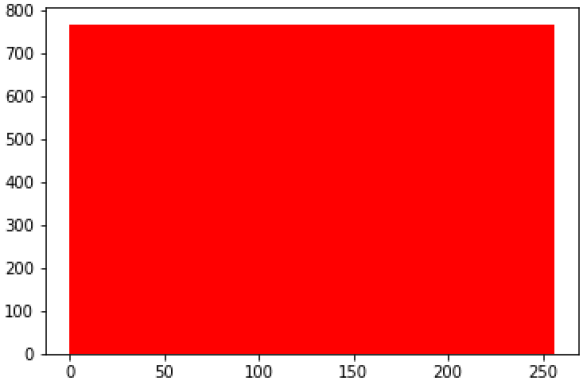




Input histogram



Output image and it histogram



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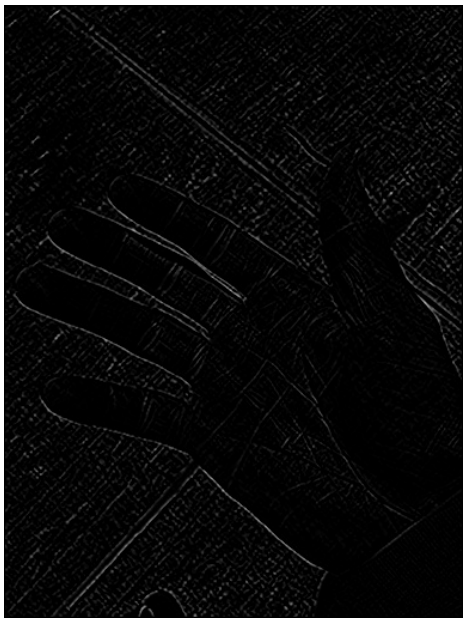
QUESTION 4. Select one image that was previously improved, and apply to this image the following

Smoothing spatial filtering (Gaussian and Box Kernels)

First-order derivative (Robert and Sobel Kernels)



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Second-order derivative

Unsharp and Highboost filtering