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**CNG 466 – FUNDAMENTALS OF IMAGE PROCESSING**

**Fall 2019-2020**

**Assignment 1 - Image enhancement in spatial domain**

**(Includes Chapter 3)**

**Deadline:** Due on 17 October 2019, Thursday, beginning of class.

**Policy:** Bring a report (including your code) to the beginning of class. Upload your report and code (.m file) to ODTUClass. Submitted file should be archive file (.7z, .rar or .zip). Late submissions will not be accepted and graded as zero.

1. **[25 points]** Implement (not use *histeq* function in matlab) and apply the histogram equalization to the input images *Q1\_Input\_1* and *Q1\_Input\_2*. Save the output images as *Q2\_Output\_1* and *Q2\_Input\_2*.
2. **[5 points]** Produce the negative of the image *Q2\_Input.* Save the output image as *Q2\_Output.*
3. **[20 points]** Use *Q3\_Input* image, and produced the blurred and binary images (see lecture notes 2, page 54) using averaging filter and thresholding. Implementation should be your own code, do not use matlab functions. You can use conv2 function.
4. **[25 points]** Use *Q4\_Input* image and produced the sharpened image (see lecture notes 2, page 67 ) using Laplacian filter (no need to perform scaling). Implementation should be your own code, do not use matlab functions. You can use conv2 function.
5. **[25 points]** Find an image by yourself (try to findout an image which could give the edges clearly) and apply sobel filter both in x and y direction to obtain edges of image. Implementation should be your own code, do not use matlab functions. You can use conv2 function.Save the input image as *Q5\_Input* and theoutput image as *Q5\_Output*.