Tutorial Image Analysis **WS 2011/2012**
Information Systems and Machine Learning (ISMLL)
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Assignment 4

Deadline: Tuesday, 06.12.2011

Assignment 4.1 (10 Points) – Manual computation

Use the following RGB image and do:

3	9	3	5	10
4	10	2	8	3
6	7	7	10	7
10	7	4	4	2
3	1	8	8	3

4	5	7	9	8
1	6	8	7	1
4	5	2	8	5
9	2	8	6	8
4	9	5	6	7

5	1	10	3	4
9	4	3	5	9
5	6	5	8	4
3	7	4	1	4
1	5	7	9	5

a) [3 Points] Create a brightness histogram of this image.
b) [3 Points] Plot the cumulative brightness frequency
c) [4 Points] Perform histogram equalization and plot the resulting equalized histogram

Assignment 4.2 (10 Points) - R

Take the picture which you have used for assignment 2 (or alternatively the violet.jpg image which was shipped with the biOps package) and

a) [5 Points] apply the Gaussian filter blurring with a width of 5 pixels and the same kernel weights using R.

0	1	2	1	0
1	3	5	3	1
2	5	9	5	2
1	3	5	3	1
0	1	2	1	0

b) [5 Points] deblur your previously blurred image by implementing and executing the appropriate deblurring algorithm from the lecture. What is the main problem when running deblurring algorithms in general
Hint: If you have problems in deblurring the color image, you can also blur and deblur a grey-scale transformed version.
c) [2 Bonus Points] Plot the original and the sequence of deblurred images. Compare the quality of your deblurring with respect to the original image and describe the deblurring process.