Assignment 2

Deadline: Tuesday, 22.11.2011

Assignment 2.1 (5 Points)

a) What does histogram equalization mean? Why is histogram equalization better than linearly extending the initial intensity histogram to the complete intensity spectrum?
b) What is motion blur? When is it useful to deblur and when to blur for increasing the quality of an image?

Assignment 2.2 (15 Points)

a) Download the R installation package from: http://cran.r-project.org/ and install it locally on your computer. Download the biOps package either again from the R-project's webpage or using R GUI. Make yourself acquainted with the biOps library using the shipped documentation.
b) Download the current image available at:

   http://www.it.uni-hildesheim.de/apps/de/webcam.htm

   as a jpg-picture and read it in R. What kind of digital image do you get?
c) Plot the image in R using the *plot(imagedata-Object)* method, compute the grey-scale version of your downloaded image, plot it, and compare it to the initial picture.
d) Create different versions of black-and-white pictures from your grey-scale image by selecting 3 different thresholds. Plot these 3 images and compare it to the grey-scale image.
e) Create histograms for both images and interpret them.
f) Write a method in R that scales a given imagedata object to new numbers of pixels in the x- and y-dimension using the bilinear interpolation method. Compare your method with the imgScale(…) method.