

## Report Assignment 2

Bsp 1)

I created two signals, that I then input in my convolution function. Instead of flipping the signal I iterate backwards, because I had problems with finding a solution for cases that would be out of bounds.

This is a little slower, because of the if Statement at every iteration, but it works for every Signal - length.

Bsp2)

I use the `deconv()` function from the Octave library to obtain the impulse response.

With this used as a convolution function I can obtain the output for the signal  $x_1$ .

Bsp3)

I cast the image to a double data type, because when multiplying two uint8 matrices, every value in the matrix gets boosted.

This was a problem I had at the end, when making the mask, since the sharpened gets multiplied by the smoothed image.

At the power law transformation one should choose a constant with which every pixel in the image gets multiplied. I chose one as the constant, since it is not necessary for demonstration purposes.

Bsp4)

I wrote a script for octave, that makes a fourier transform on the image with the function `fft2`. With `fftshift()` the transform gets shifted in the middle of the image. Then I used the `abs()` function, which combines the imaginary and real part of the image. On the first image, I did not reduce the contrast by `log(1+img)`, because it is better visible this way. On the second image it was better to reduce the contrast, so the solution is more visible. En the end I used the `colormap` function, to reproduce the look of the images in the book.