University of Potsdam
Institute for Physics and Astronomy

Exercise No. 2
Date: 29/04/2014

Digital Image Processing in Astronomy

1. Invert the picture 'updown.jpg'[1] upside down using MATLAB and save it.

2. Do the following gray level transformations to a image:

(a) Negative transformation.

(b) Logarithmic transformation.

(c) Contrast stretching.

3. Add the images, 'imgpart1.jpg' and 'imgpart2.jpg', and see how it looks. Do some other arithmetic operations on images.

4. Look at the picture 'band.jpg'. The left sides appear lighter and right sides appear darker due to optical illusion. Show in a grpah that is not correct and the respective gray values are constant. What is the name of this kind of optical effect?

5. Merge the fourth bit plane of 'im1gray.jpg' and sixth bit plane of 'im2gray.jpg'.

6. Histogram matching:

(a) Plot the histogram of 'flower.jpg'.

(b) Using manualhist function, find a function which looks like the histogram of the picture and do histogram matching.

[1] All images and m-files can be found at: /home/weber/pavalli/lab2