UNIVERSITÄT HAMBURG, DEPARTMENT OF INFORMATICS

EXERCISES FOR IMAGE PROCESSING-I
PROBLEM SHEET 4

Ali Saleh & Javad Malaquti

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1 THEORETICAL PROBLEMS

1.1 HISTOGRAMS AND NOISE

- "A histogram is a graphical representation of the distribution of numerical data"– Wikipedia. In images it is represented as a plot of each graylevel/Color value on the X-axis and the frequqncy of it's occurences in the image on the Y-axis. The histogram of the parcels on convery belt will look like the figure below. Only two bars each representing one of the two gray

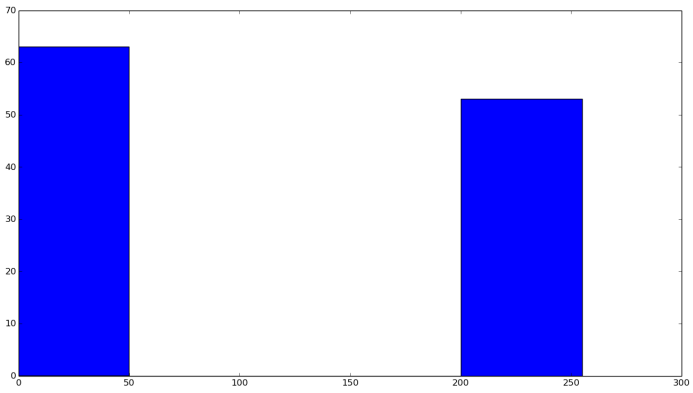

Figure 1.1: Histogram of Black & White

- In case of sensor noise there will be a change in the histogram. The noise will change the grayvalues of some of pixels which will lead to inbalance between the black and white bins in the histogram.

1.2 Projections

1.3 Filters

1.4 Convolution

The white rectangle in the middle will blur at the edges. See the Image below.

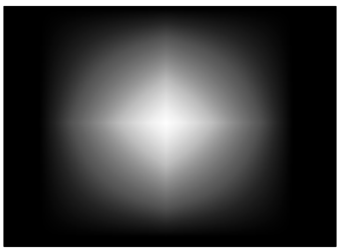

Figure 1.2: Convolution