LUT
Lappeenranta
University of Technology

Practise session 4: Intensity transformation.

1. An image have intensities in range $[0,1]$ with a PDF $p_r(r)$ given in Fig. 1, a). The PDF $p_z(z)$ for the intensities of the output image is given in Fig. 1, b). Now find the transformation T, $z=T(r)$, which will transform the intensity levels of the original image such the intensities of the output image would have the PDF according to Fig. 1, b).   (1)
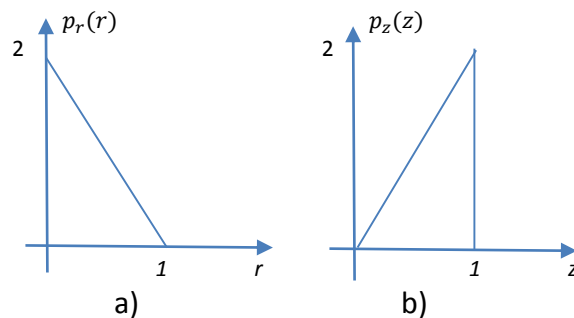

Fig. 1. a) PDF of the intensities of the original image. b) PDF of the intensities of the output image.

2. Apply Gabor filters to Lena image. See function *imgaborfilt* in Matlab. Which combination of parameters would give a high response to the left eye and then to the right eye?   (1)

3. Find the histogram for the image in Fig. 2. Then equalize the histogram and produce the output image. Does the output image reveal any new features compared to the original image? What is the difference image, the image between the original image and the image having an equalized histogram?

Fig.2. Planet.

Design a new histogram which would possibly reveal more details in the dark areas of the image (in left part of the image). Use Matlab for finding the solution.   (2)