Image & Video Processing

IIVP630C

LAB ASSIGNMENT 3

1. Rotate the following grayscale image by 45° using rotation matrix. Interpolate the rotated image to compute the grayscales of the pixels, for which the grayscales are not defined in the rotated image. **(Do not use the inbuilt functions to rotate and interpolate the image. Create your own bilinear interpolation function to interpolate the image. The image is available in MATLAB with the name cameraman.tif)**.

Fig.1

2. Compute the equalized histogram of the image shown in Fig.1. Transform the image using the equalized histogram. **(Do not use the inbuilt functions to compute the equalized histogram. Implement the transformation logic without using inbuilt functions)**.

3. Convolve the image shown in Fig.1, with Sobel, and Prewitt kernels defined in x and y directions using convolution technique discussed in the class. Show the resulting images. **(Do not use conv or any other inbuilt functions to convolve the image).**

4.Take the Lena image. Image size should be larger than 256×256. Compute the connected components over 16×16 non-overlapping blocks using V={150-200} and 4, 8 adjacencies. The program should be adaptable. User should be able to change the V set and adjacency to obtain a different set of connected component. The output image should show all the blocks together in a single image.