**Image Processing Lab**
**Sem 1**
**Lab 11: Edge and Line Detection**
**25/10/2018**

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1.Try to complete the lab questions during the lab time (in lab submission)
2.Please do not copy programs.
3.Use the images given in the Resources folder.

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**Note :** Open *cameraman.png*. Add noise AWGN(0,0.1) and save it as *cameraman_noisy.png*. Use these two images for the following.

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1. **Using finite difference kernels**
   Find the edges of the images using the following kernels :
   (a) Sobel Operator
   (b) Prewitts Operator
   (c) Roberts Operator
   Show all the intermediate gradient images. Comment on the results obtained. How does the kernels behave in presence of noise? Explain the disadvantages of these kernels.

2. **Using $2^{nd}$ order derivative kernel**
   Find the edges of the images using the Laplacian Operator. Compare the results with those obtained in qn1.

3. **Using 2D Edge Detection Filters**
   Find the edges of the images using the Difference of Gaussian(DoG) and Laplacian of Gaussian(LoG) operators. Compare the results with those obtained in qn1 and qn2.

4. **Canny Edge Detection**
   Apply the Canny Edge Detection algorithm to get the edges of the images. Note the advantages and disadvantages of the algorithm. Give some suggestions to improve on the disadvantages.

5. **Line Detection**
   Use Hough Trasform to find the lines present in the image. Use the line.jpg image.