National Institute of Technology Rourkela

Department of Computer Science & Engineering

**Lab Assignments, 2019**

Subject: **Image Processing LAB** Subject Code: **CS-673**

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**Assignments 5**

1. Plot the real and imaginary component of the basis images separately in case of Discrete Fourier Transform (DFT) for a specified size (e.g., $8 \times 8$, $16 \times 16$)

2. Plot the real and imaginary component of the basis images separately in case of Discrete cosine Transform (DCT) for a specified size (e.g., $8 \times 8$, $16 \times 16$)

3. Consider an input image 'cameraman.tif' and display its DCT coefficients. Perform image reconstruction using the high energy coefficients of DCT (take a percentage of coefficients provided as input). Also compare the reconstructed image with original image w.r.t PSNR and SSIM (using in-built function). Note remark about quality of reconstruction in relationship to percentage of coefficients.
   **[N.B. in python use "from skimage.measure import structural_similarity as ssim" for ssim and use "skimage.measure import compare_psnr as psnr" for psnr]**
   **[N.B. in matlab use psnr and ssim function receptively]**

4. Write a program to display the Fourier spectrum for a given image. Perform image reconstruction and find the error between original image and reconstructed image.

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