***Digital Image Processing Lab Experiment 4***

***Problem Objective***

Write C/C++ modular functions to perform the following operations on the 512 × 512

grayscale test images, e.g. lena\_gray\_512.jpg, jetplane.jpg, lake.jpg, livingroom.jpg,

mandril\_gray.jpg, pirate.jpg, walkbridge.jpg.

A. **FFT2** (takes input image filename as the argument; gives 2D FFT coefficients as output)

B. **IFFT2** (takes 2D FFT coefficients as input argument; gives the back-projected/

reconstructed image as output)

C. Perform *Ideal*, *Gaussian*, and *Butterworth* low-pass and high-pass filtering, taking cut-off

frequency, *D*0, and image filename as input arguments) respectively with

**Ideal\_LPF Ideal\_HPF**

**Gaussian\_LPF Gaussian\_HPF**

**Butterworth\_LPF Butterworth\_HPF**

**Display the (shifted) magnitude spectrums of the input, the filter and the filtered output. Make use of the tracker/slider function to 1) choose images, 2) filter types and 3) cut-off frequencies.**