Lab Assignment

DATE-
11/3/19

Do not use inbuilt functions

1. Take image I and use Gaussian low pass filter and show the effect of ringing

2. Image II

I. Create a spatial filter to get the horizontal edge of the image
II. Create a spatial filter to get the vertical edge of the image
III. Transform both of these filters to the frequency domain.
IV. Transform the two cats image to the frequency domain

V. Apply the appropriate operations in the frequency domain and transform the data back into the spatial domain

VI. Sum the horizontal and vertical edge components together and obtain the resulting image

3. For image III defined as f(x,y), show

($G\sigma_1 - G\sigma_2$) * f(x,y) = DoG * f(x,y)

Where Difference of Gaussian is defined as:

$$DoG \triangleq G_{\sigma_1} - G_{\sigma_2} = \frac{1}{\sqrt{2\pi}} \left(\frac{1}{\sigma_1} e^{-(x^2+y^2)/2\sigma_1^2} - \frac{1}{\sigma_2} e^{-(x^2+y^2)/2\sigma_2^2} \right)$$