UNIVERSITY OF ENGINEERING AND TECHNOLOGY TAXILA

FACULTY OF TELECOMMUNICATION AND INFORMATION ENGINEERING

Computer Engineering Department

DIGITAL IMAGE PROCESSING

LAB MANUAL 8

Sharpening Spatial Filtering

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Sharpening Spatial Filtering

LAB OBJECTIVE:

The objective of this lab is to understand & implement

1) Sharpening Spatial Filters
2) The Laplacian

TASK 1

Write a program to implement "The Laplacian" and note the effects on given images.

$$\nabla^2 f = [f(x+1, y) + f(x-1, y) + f(x, y+1) + f(x, y-1)] - 4f(x, y).$$

$$g(x, y) = \begin{cases} f(x, y) - \nabla^2 f(x, y) & \text{if the center coefficient of the Laplacian mask is negative} \\ f(x, y) + \nabla^2 f(x, y) & \text{if the center coefficient of the Laplacian mask is positive.} \end{cases}$$

TASK 2

Use "The Laplacian" to exercise "High Boost Filtering" and write down your observations.

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