LAB05: Image Enhancement in the Frequency Domain (Part 2)

Objectives

Upon completion of this lab, you will be able to:

1. Write a user-defined function in MATLAB to demonstrate wrap-around effects by using different methods, including Butterworth lowpass filter without zero-padding and Butterworth lowpass filter with zero-padding.

Exercises

Note that you should create your own function in MATLAB as MATLAB User-defined function. It means that you cannot call MATLAB built-in function, which generates output in the same manner as your own function. You can use the images provided in the folder **\Google Drive\EGCO486_60-1\LABs\LAB05** for your exercises.

1) Compare between Butterworth lowpass filter without zero-padding and Butterworth lowpass filter with zero-padding

1.1 Write a user-defined function in MATLAB using Butterworth lowpass filter without zero-padding. Take the following function name: Myblf.m. When this program is used with image "square_original.tif" the result as shown in Figure 1.
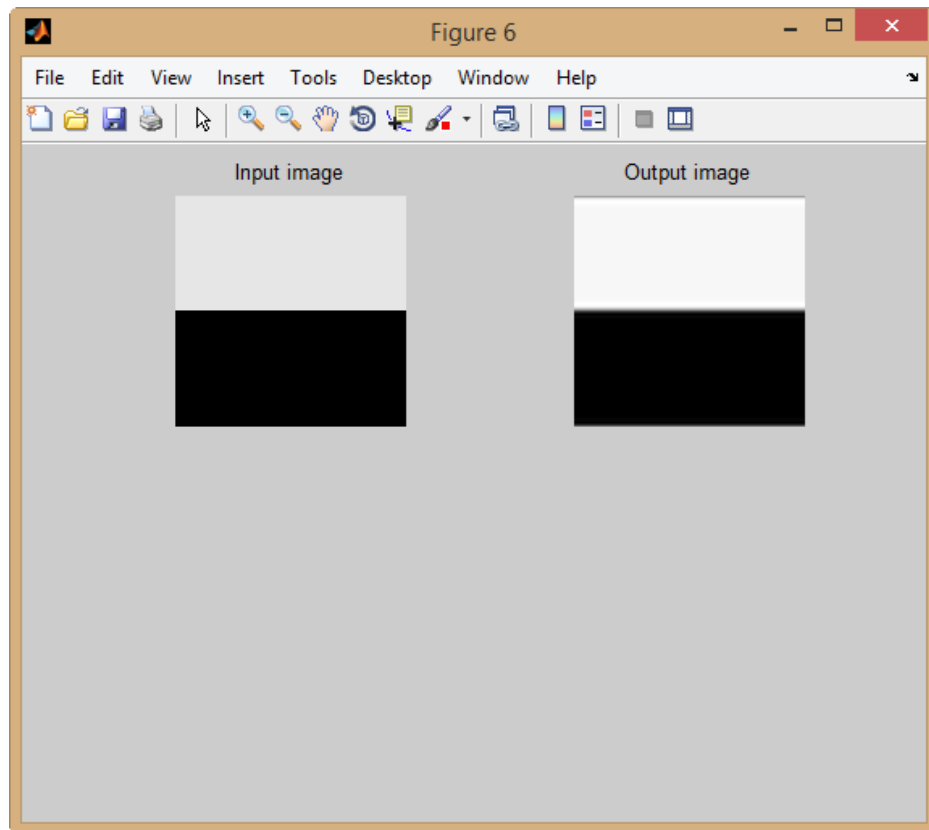
Figure 1: The result of applying the Butterworth lowpass filter without zero-padding (D_0 = 20, n = 2).

1.2 To avoid wrap-around effects, write a user-defined function in MATLAB using Butterworth lowpass filter with zero-padding. Take the following function name: Myblfpad.m. When this program is used with image "square_original.tif" the result as shown in Figure 2.
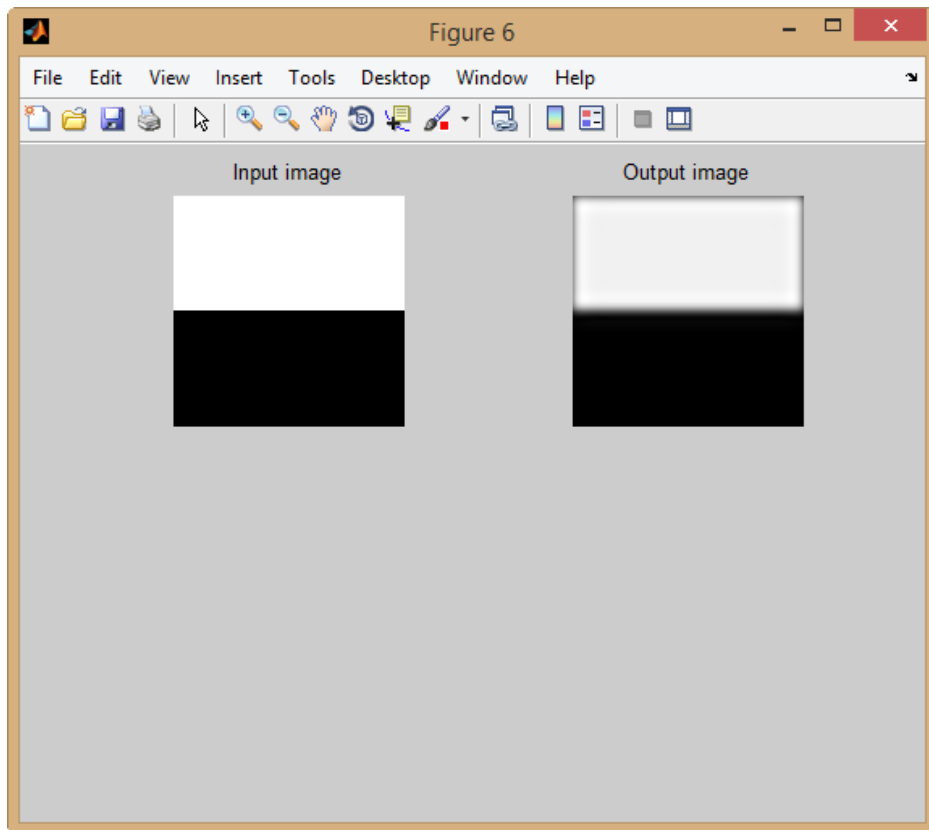
Figure 2: The result of applying the Butterworth lowpass filter with zero-padding ($D_0 = 20$, n = 2).

What you need to submit:

Prepare a zip file that contains all matlab files (m-file extension). Email the zip file to the account **send2narit@hotmail.com** with the following subject line: **EGCO486_LABxx_yyy**, which xx is a number of LAB and yyy is the last 3 digits of the student identification number. Your email should reach us before Tuesday 11:59 PM.