LAB13: Template matching

Objectives

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

1. Write a user-defined function in MATLAB to find and determine the corresponding positions on an input image which are best correlated with the template image using normalized cross-correlation.
2. Write a program in MATLAB for building a panorama image from two images using normalized cross-correlation.

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\LAB13** for your exercises.

1) Template matching in spatial domain using normalized cross-correlation (NCC)

1.1 Write the user-defined function in MATLAB to determine the positions on the original image which are best correlated with the template image. Define to use the template matching technique by normalized cross-correlation. Take the following function name: Mytemcorr.m. When this program is used with images, "cameraman.tif" and "template.bmp", the result as shown in Figure 1.

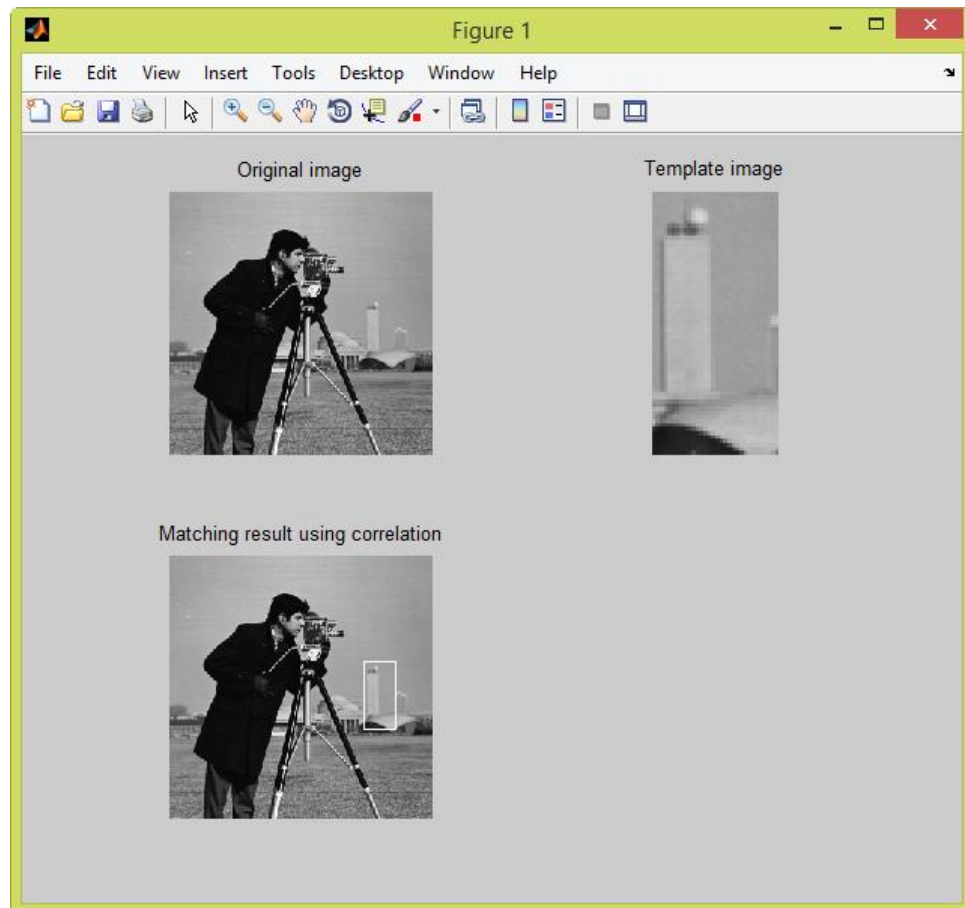Figure 1: The result of applying the normalized cross-correlation.

2) Create panorama image using normalized cross-correlation

2.1 Write the program in MATLAB to build a panorama image from two images using template matching by normalized cross-correlation. Take the following program name: Propanotemcorr.m. When this program is used with images, "p1.bmp" and "p2.bmp", the result as shown in Figure 2.
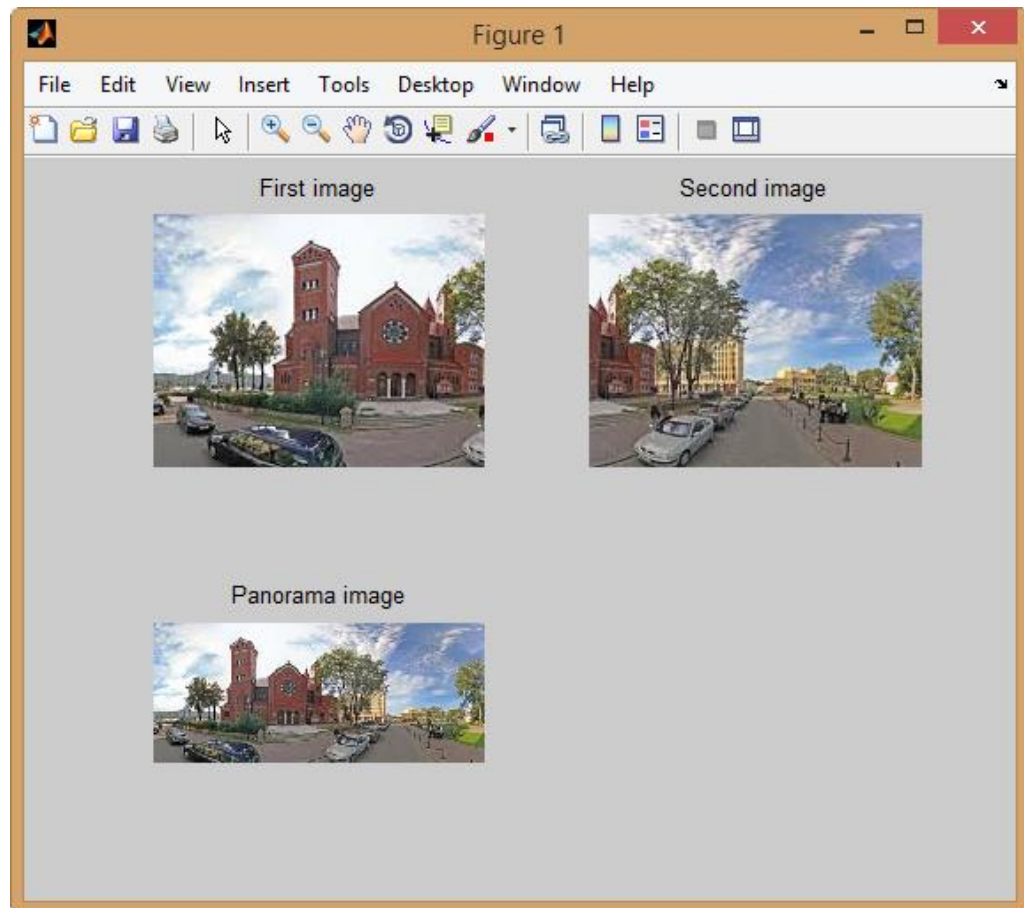
Figure 2: The result of building the panorama image using normalized cross-correlation.

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.