

CSc 8830: Computer Vision Assignment 2

Submission in Classroom:

Manage all your code in a github repo for each assignment. Provide a link to the repo in the PDF document. You can choose to program in either C/C++ or Python. Submit the script with clear commenting and ReadMe documentation on top of each script to execute the script.

Create a working demonstration of your application and record a screen-recording or a properly captured footage of the working system.

Upload the PDF document and video in the Google classroom submission. (copying the script in the document is not required; GitHub repo must be accessible)

For parts that require or ask for "solve by hand" or "show by example" methods:

convert your problem solving by hand into a digital format (typed or scanned only. You can use camera scanner apps) and embedded/appended into the final PDF documentation. Camera images of paper worksheets will NOT be accepted

Object detection using Template Matching through Correlation

1. Demonstrate detection of an object in an image using template matching using correlation method. The (cropped) image that will be used as a template must be taken from a completely different scene (i.e. do not just crop a section containing the object of interest from your image being evaluated/tested). Do the evaluation for 10 objects (can be in the same or different images).

Convolution and Fourier Transform

2. Consider an image L captured by your camera of choice. Apply Gaussian Blurring filter on the image L to result in image L_b.

Now, retrieve image L back from L_b using image filtering. While there are multiple ways to solve this problem, particularly, use Fourier transform in your solution.

Implementation

3. Implement a template matching web application that checks from a local database of 10 objects' templates for object detection in a scene. Once detected the object boundaries/region, then blur the entire region (pixels) using a blur filter.