EECS 22: Addendum to Assignment 2

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1 Digital Image Processing, PhotoLab

This addendum to Assignment 2 serves to clarify and correct two points in the EECS 22 Assignment 2 instructions, namely (1) the Zoom In DIP operation and (2) the submission procedure.

1.1 Zoom In Operation

In this section, you will implement a simple zoom-in 2x function, which enlarges the interesting part of the image by a factor of two.
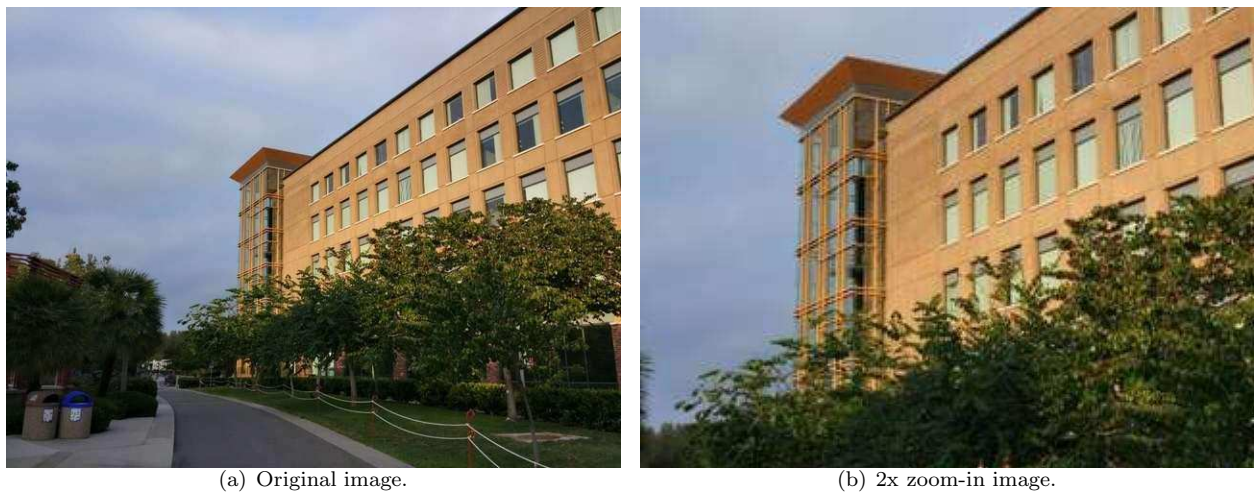

(a) Original image.

(b) 2x zoom-in image.

Figure 1: Original image and its 2x zoom-in counterpart.

To zoom in, the intensity values in the center of the picture are distributed to the whole picture. For the 2x zoom factor, every pixel in the zoom area is essentially duplicated in both X and Y directions.

The following shows an example:

```
                1 |5  4| 10                         5  5  4  4
                4 |2  6| 11                         5  5  4  4
Before zoom-in: 3  8  7  14     After zoom-in: 2  2  6  6
                2  9  2  12                         2  2  6  6
```

You need to define and implement a function to do this DIP.

```
/* Zoom in an image */
void  Zoom(unsigned char R[WIDTH][HEIGHT], unsigned char G[WIDTH][HEIGHT],
        unsigned char B[WIDTH][HEIGHT]);
```

For our example image, the interesting part is the tower. Thus, the part of the image you want to zoom in is within the rectangular area specified by the following pixel coordinates: (160, 120), (479, 120), (160,359) and (479, 359). Specifically, the top-left pixel has the offset 160 in X direction and 120 in Y direction. Figure 1 shows an example of this operation.

```
please make your choice: 9
"Zoom" operation is done!


--------------------------------
1: Load a PPM image
2: Save an image in PPM and JPEG format
3: Make a negative of an image
4: Color filter an image
5: Sketch the edge of an image
6: Flip an image horizontally
7: Mirror an image vertically
8: Add Border to an image
9: Zoom an image
10: Test all functions
11: Exit
please make your choice:
```

1.2 Assignment Submission

After careful review and adjustment of the security settings on the EECS servers, we have revised and improved the homework submission procedure.
From now on, please use the following command to submit your homework deliverables:

`~eecs22/bin/turnin.sh`

The submission procedure will appear just as before, going through an interactive dialog of submitting the deliverables.
The following shows an example for this Assignment 2:

```
[eecs22test@bondi ~]$ ~eecs22/bin/turnin.sh
================================================================
EECS 22 FALL 2016:
Project "hw2" submission for eecs22test
Due date: Thu Oct 20 18:00:00 2016
** Looking for files:
**    PhotoLab.c
**    PhotoLab.script
**    PhotoLab.txt
================================================================
* Please confirm the following:                              *
* "I have read the Section on Academic Honesty in the        *
* UCI Catalogue of Classes (available online at              *
* http://www.editor.uci.edu/catalogue/appx/appx.2.htm#gen0)  *
* and submit my original work accordingly."                  *
   Please type YES to confirm. YES
```

```
================================================================
File PhotoLab.c exists, overwrite? [yes, no] yes
  File PhotoLab.c has been overwritten
Submit PhotoLab.txt [yes, no]? yes
  File PhotoLab.txt has been submitted
Submit PhotoLab.script [yes, no]? yes
  File PhotoLab.script has been submitted
PhotoLab.c

PhotoLab.txt

PhotoLab.script

================================================================
  Summary:
================================================================
Submitted on Thu Oct 13 09:08:27 2016
You just submitted file(s):
  PhotoLab.c
  PhotoLab.txt
  PhotoLab.script

/users/ugrad/2016/fall/eecs22test
```