Digital Image Processing (2022)
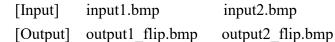
Homework 1

{Image input/flip/output + Resolution + Scaling}

Deadline: 111.10.13

Image input/flip/output (30%)

Using C++ or C, read, flip horizontally and write the images of BMP format.

Input1.bmp

[Input]   input1.bmp   input2.bmp
[Output]   output1_flip.bmp   output2_flip.bmp

output1_flip.bmp

Resolution (30%)

Using C++ or C, accomplish the discussion of Quantization Resolution.

[Input]   input1.bmp   (4*8bits)   input2.bmp   (3*8bits)
[Output]   output1_1.bmp (4*6bits)   output2_1.bmp   (3*6bits)
            output1_2.bmp (4*4bits)   output2_2.bmp   (3*4bits)
            output1_3.bmp (4*2bits)   output2_3.bmp   (3*2bits)

Scaling (40%)

Using C++ or C, accomplish Up-scaling and Down-scaling by Bilinear Interpolation with rate 1.5.

[Input]	input1.bmp	input2.bmp
[Output]	output1_up.bmp	output2_up.bmp
	output1_down.bmp	output2_down.bmp

Digital Image Processing (2022)

Homework Rules and Grading Policy

Homework will be graded by:

1. Correctness (70%)

2. Report (30%)

    Image input/flip/output

        - Explain BMP format in most 2 pages (A4).

    Resolution

        - Do some discussion and explain how you do it in most 1 page (A4).

    Scaling

        - Explain how Bilinear interpolation works in most 1 page (A4).

Upload:

    [web]   E3

    [File Name] hw1_StudentID.zip (ex: hw1_123456789.zip)

        - report in the format of .pdf.

        - three C, C++ codes with comments.

        - ReadMe.txt file which describes how to run your program.

        - all output images.

Remind:

Deadline

If you have a late submission by 1 to 7 days, you will only get 70% of the score.

We DO NOT accept any late submission after 7 days after the deadline