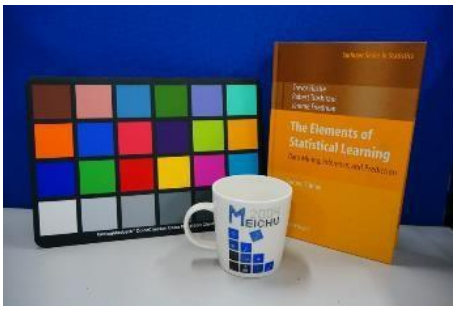
Digital Image Processing (2022)

Homework 1

{Image input/output + Resolution + Scaling}

Deadline: 111.3.17

Image input/output (30%)



Using C++ or C, accomplish File Read Write of BMP format.
Please notice Bit Depth of the images.

[Input] input1.bmp input2.bmp
[Output] output1.bmp output2.bmp

Demo: Run and check the output files and your code.
Report: Explain BMP format in most 2 pages (A4).
File: ImgRWbmp

Resolution (30%)

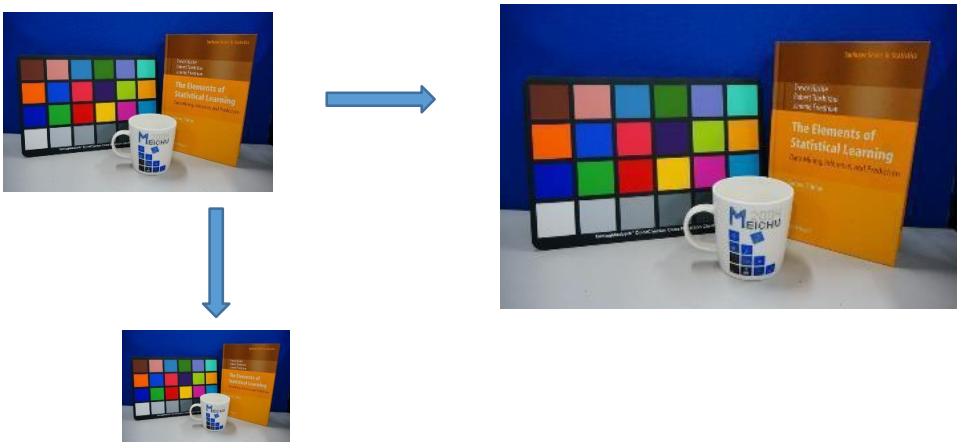
Using C++ or C, accomplish the discussion of Quantization Resolution.

[Input] input1.bmp input2.bmp
[Output] output1_1.bmp output2_1.bmp
output1_2.bmp output2_2.bmp
output1_3.bmp output2_3.bmp

Demo: Run and check the output files and your code.
Report: Do some discussion and explain how you do it in most 1 page (A4).
File: ImgQR

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

Demo: Run and check the output files and your code.

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

File: ImgScaling

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Homework Rules and Grading Policy

Homework will be graded by:

1. Correctness
2. Algorithm description
3. Discussion

Upload:

[web] E3

[File Name] hw1_StudentID.zip (ex: hw1_1234567.zip)

Remind:

1. Your C, C++ code with comments.
2. Your report in the format of .pdf.
3. ReadMe.txt file which describes how to run your program.
4. 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.