Digital Image Processing

Homework#3

Power law transformation and High Boost

Power Law transformation

Power Law transformation

- Use Matlab to finish a program of Power Law transformation. (.m file)
- The function definition should be PowerLaw(imagePath, gamma)
- The result should be like figure 1.
- Do not use that power-law transformation built-in function, please finish by yourself.

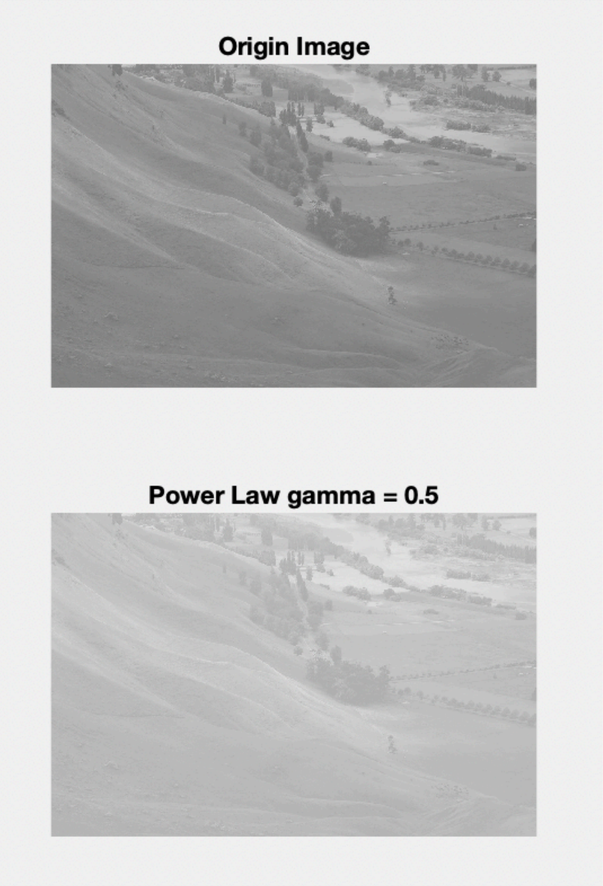


Figure 1. Power-Law transformation result

High Boost Filter

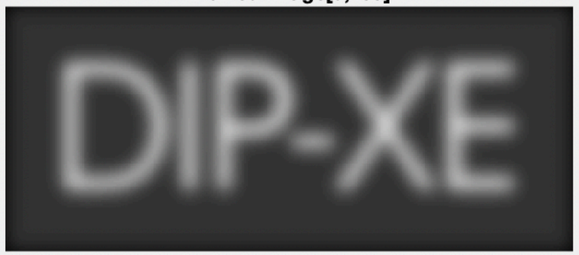
High Boost

- Use Matlab to finish a program of High Boost Filter. (.m file)
- The function definition should be HighBoost(imagePath)
- High Boost Processing Step in textbook:
  1. Blur the original image (filter use 31 by 31 and $\sigma = 5$)
  2. Subtract the blurred image from the original (resulting difference is called “mask”)
  3. Add the mask with parameter k to the original (k parameter is mask weight, ex: k=4.5 => g(x) = 4.5*mask)

Output Example

Origin Image[0,2

Blurred Image[0,255]



mask[-255 255]

k=1 [0 255]

k=4.5 High Boost image [0 255]

Other

- Use the fspecial() function to get the Gaussian filter, do not use the imgaussfilt().
- You can use the conv2() function to do convolution.
- If you get an error when compute the mask, pay attention to whether the type of matrix is wrong, the type of matrix should be **unsigned**.
- Do not use that High Boost built-in function, please finish by yourself.

- Because we have two files in our homework, please compress that to the zip file and the file name should be yourname_HW3.zip.
- If you are afraid that I can't execute your code, please give the description to let me execute your program.
- The homework deadline is 11/10 23:59:59.