I put filtered images and my own convolution kernels in the experiments folder.

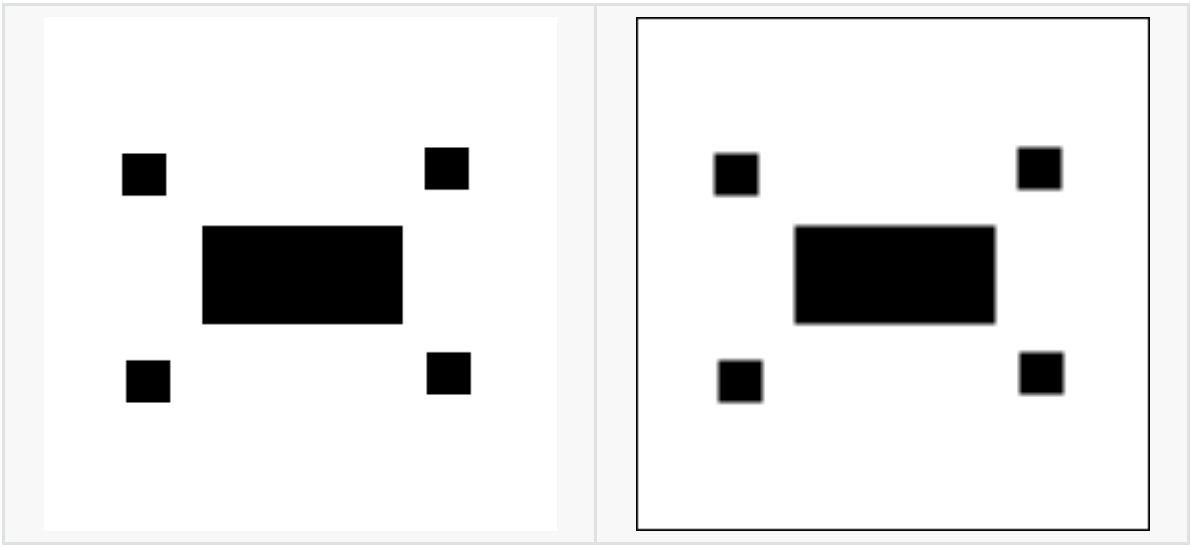
When the program convolve, I get the maximum value of either sum of positive weights and the sum of the negative weights. Using the absolute value of maximum value as a scale factor. I need to make sure the scale factor is equal to 1 if the maximum value is equal to 0. I clamp both the scale factor and final pixel value between 0 and 255.

For boundary condition, I use reflection. I reflect pixels index beyond the boundary.

Basic Requirements

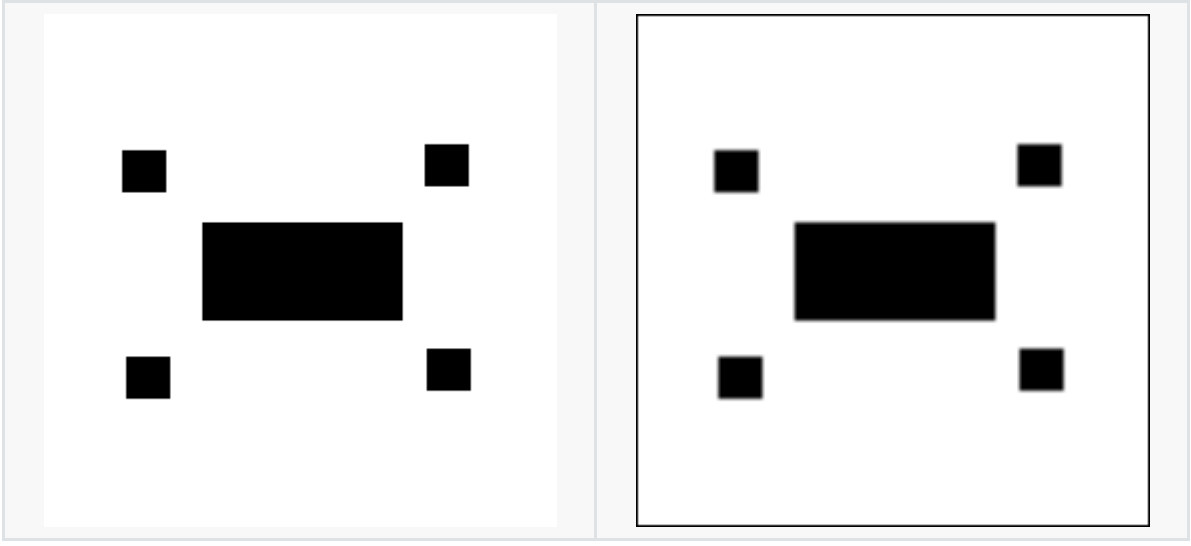
original vs pulse.filt

The image blurred by pulse filter



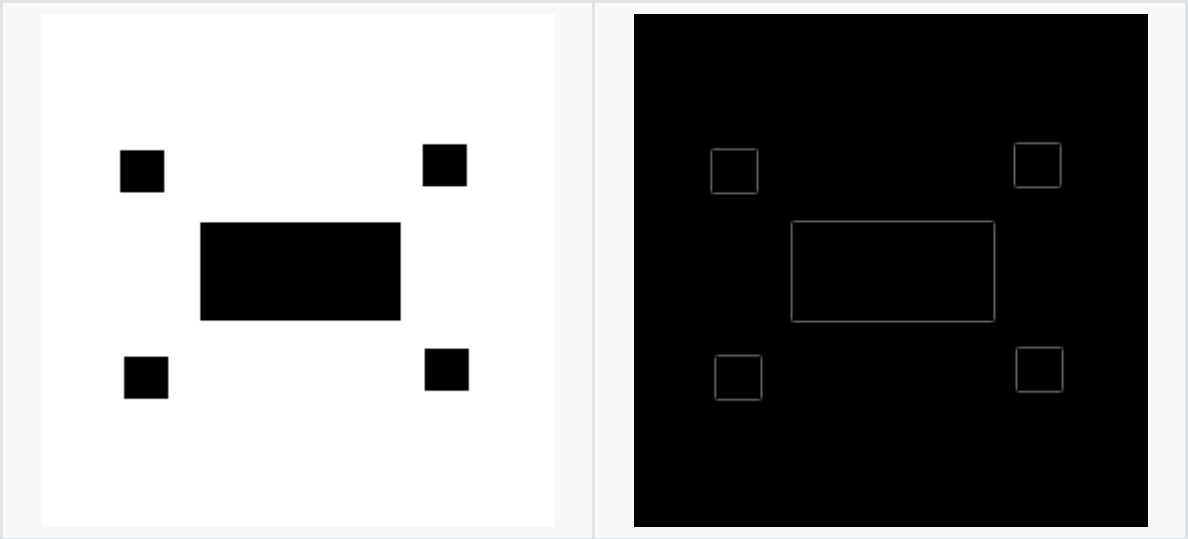
original vs tent.filt

The image blurred by tent filter



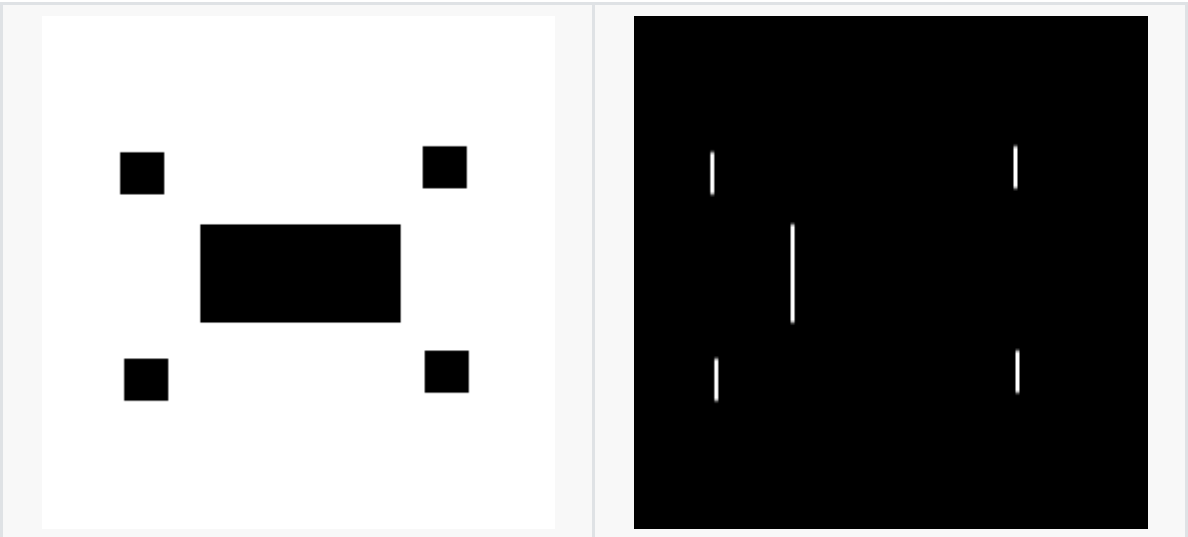
original vs hp.filt

hp filter draw the outline of origin image



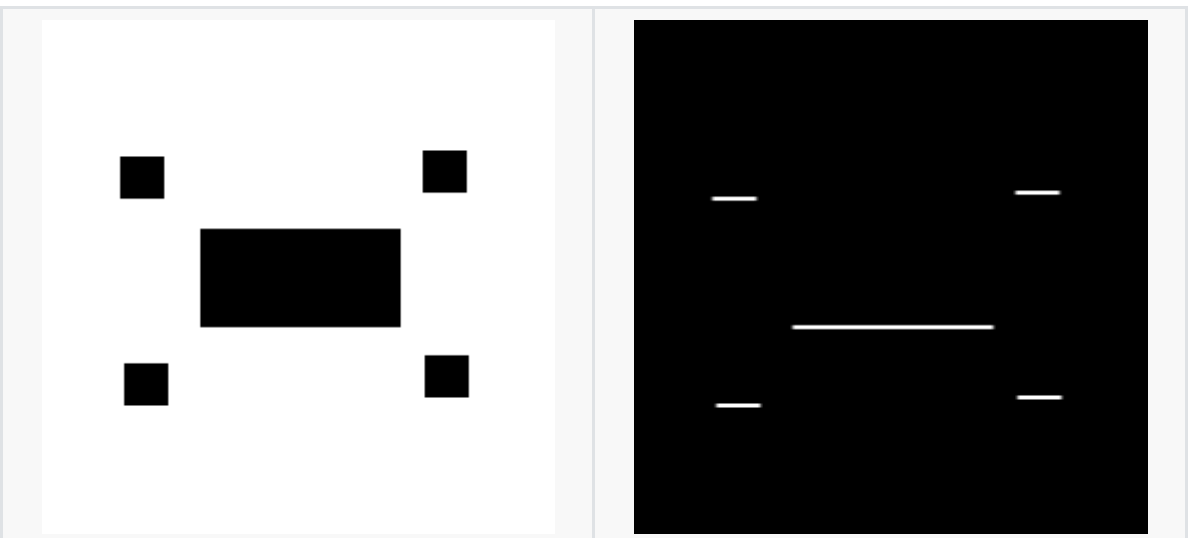
original vs sobol-horiz.filt

sobol-horiz filter compress the rectangle to a line and rotate it



original vs sobol-vert.filt

sobol-vertfilter compress the rectangle to a line

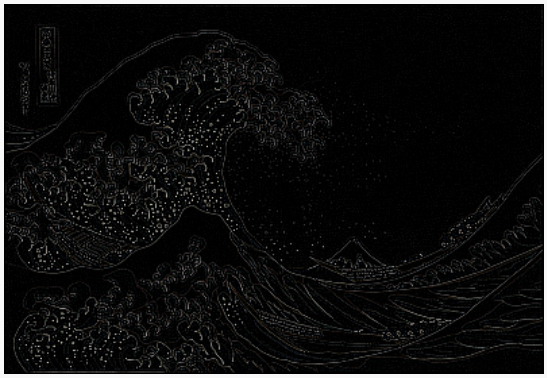


original vs new_sharpen.filt

new_sharpen filter make the outline more clear


original vs new_outline .filt

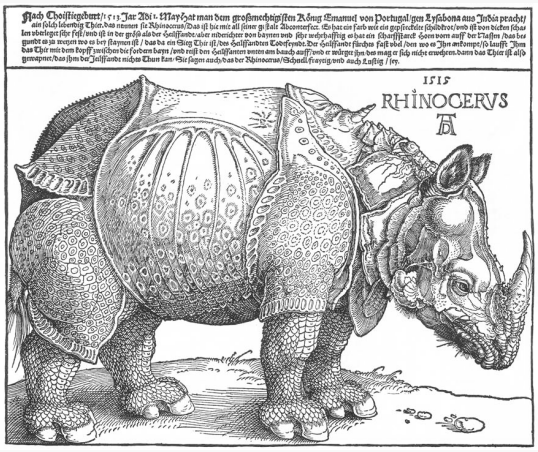
new_outline draw the outline of original image

Advanced Extension

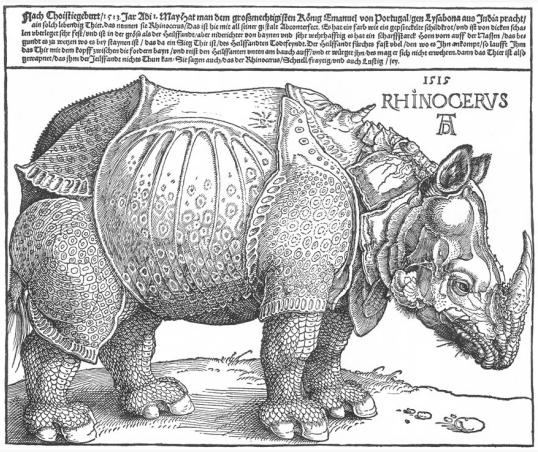
original vs Gaussian filter [sigma = 2]

greater sigma make original image blurrier



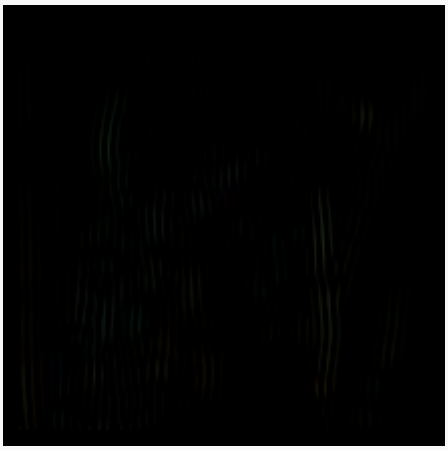
original vs Gaussian filter [sigma = 4]

greater sigma make original image blurrier



original vs Gaussian filter [theta = 0, sigma = 4, periods = 4]

It's hard to identify the original image



original vs Gaussian filter [theta = 45, sigma = 4, periods = 8]

we can see some outlines from upper right to bottom left