MICHELLE TAN

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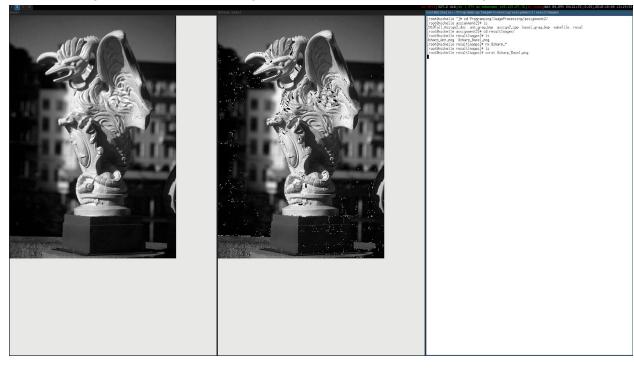
This project was completed to demonstrate common edge detection methods as well as image sharpening methods.

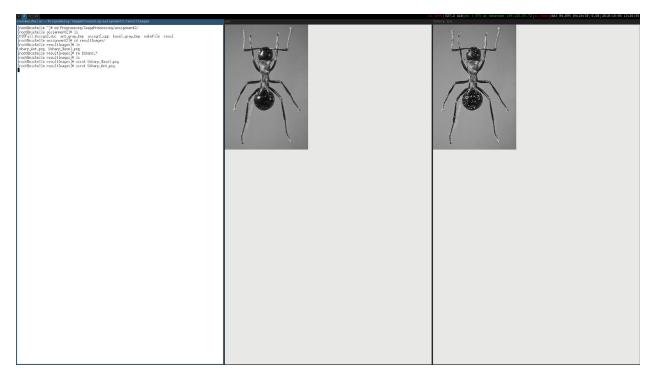
For the first part of the assignment we were required to implement Sobel and Usharp filters. The Sobel filter takes the first order derivative in the x direction and the first order derivative in the y direction via x and y masks. Then we take the sum of each derivative squared and take the square root of that sum to get the new value of the pixel. For the Usharp method we blur the picture then take the difference between the blurred picture and the original picture and add it to the original picture. Finally to create the LoG mask for sigma 1.4 and sigma 5 we use the

LoG(x,y) =
$$-\frac{1}{\pi\sigma^4} \left[1 - \frac{x^2 + y^2}{2\sigma^2} \right] e^{-\frac{x^2 + y^2}{2\sigma^2}}$$

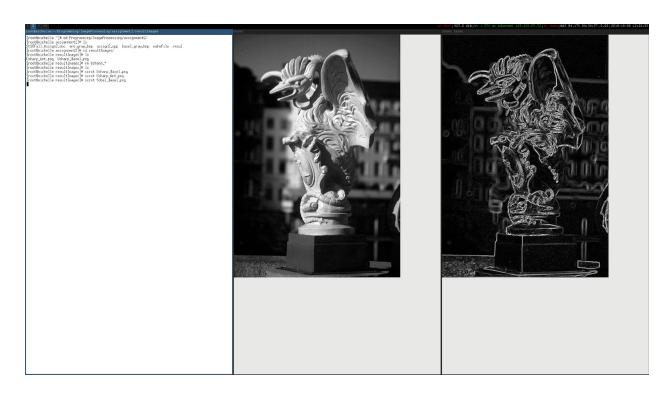
equation $0 \le 10^{-10}$. After that we balance the matrix to get the sum of the matrix as close to 0 as possible. Then we apply the filter over image.

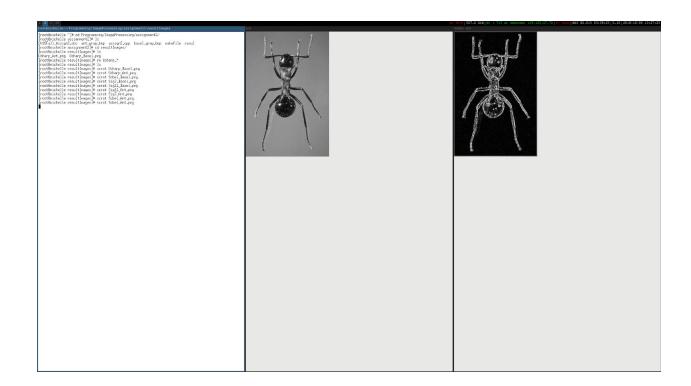
Here are images that compare the original and Usharp ant and basel images



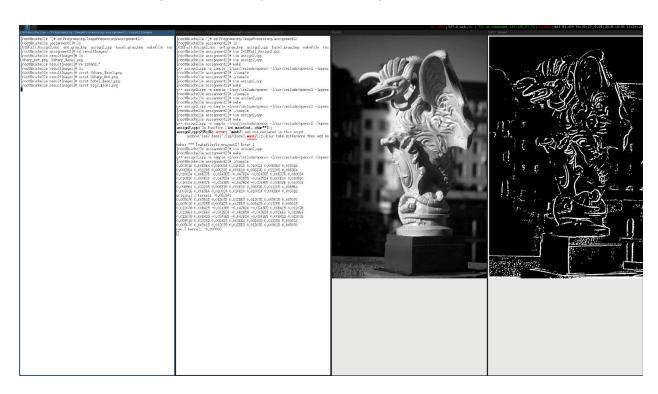


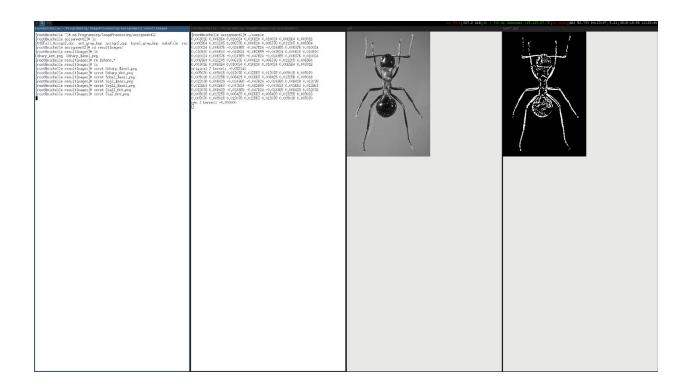
Here are the images after the Sobel operator



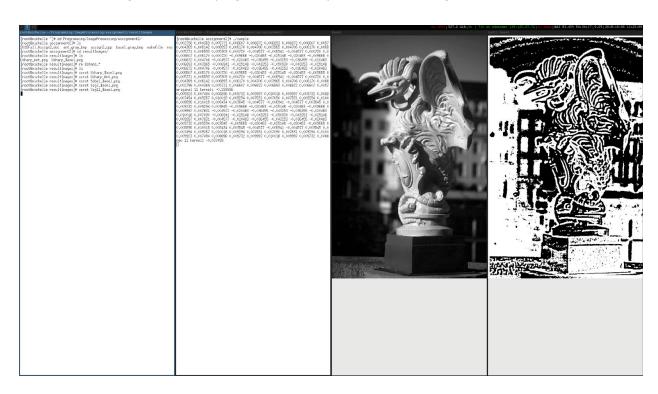


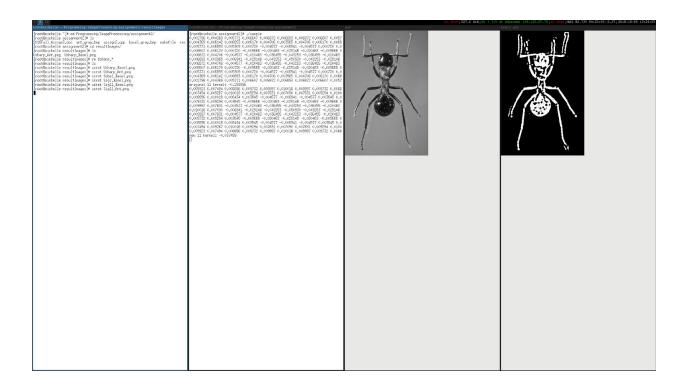
Here are the LoG images with the 7 by 7 mask with a sigma value of 1.4





Here are the images after applying an LoG 11 by 11 filter with a sigma value of 5





BUGS and NOTES

Please make before running. Run with ./sample.