




GNR602 Project No. 20

Implementing Canny edge detector with user specified sigma parameter and upper and lower thresholds for edge detection in a remote sensing image.

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Taking Image as
input

Converting it into
grayscale image

Smoothing using
gaussian filter

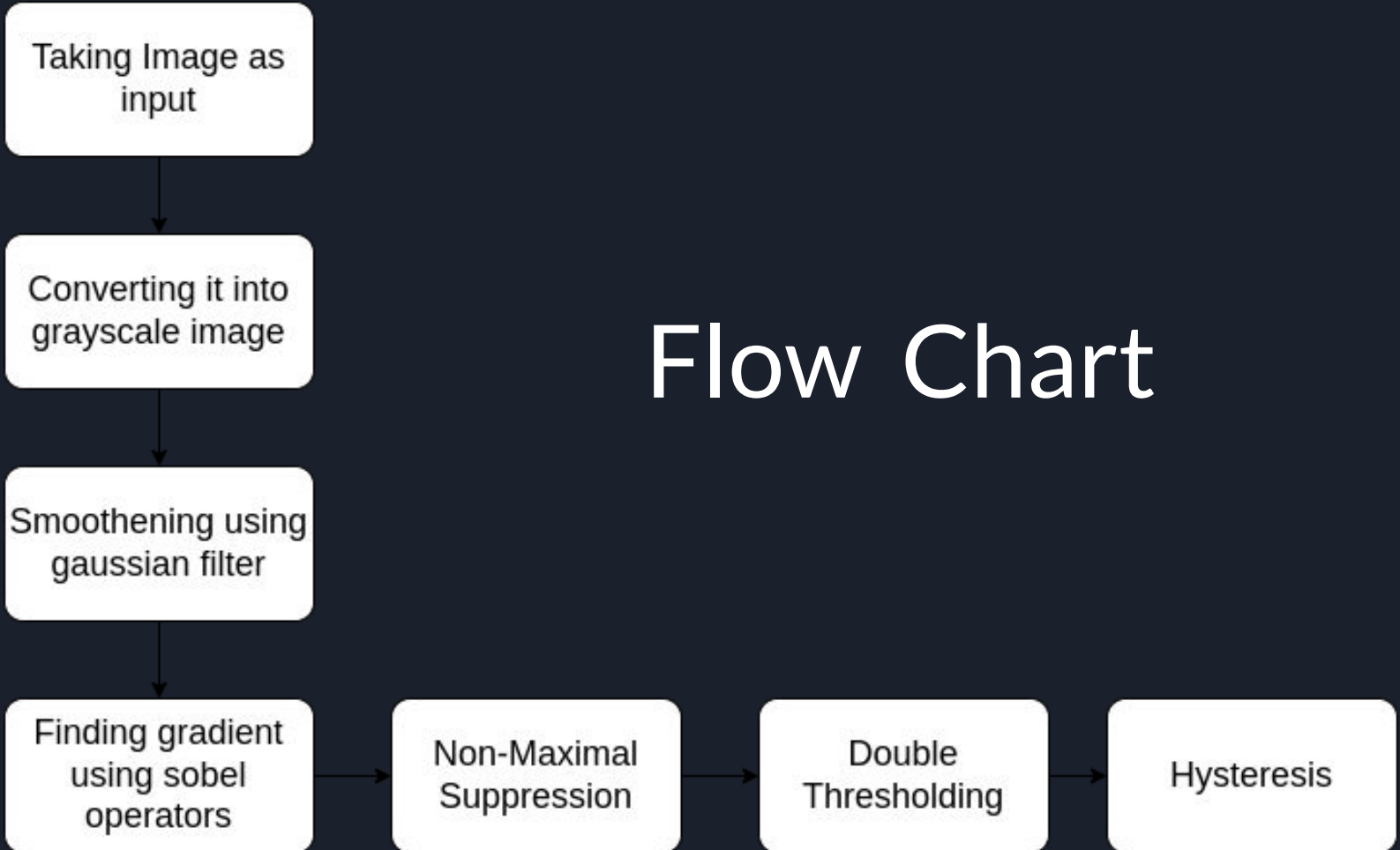
Finding gradient
using sobel
operators

Non-Maximal
Suppression

Double
Thresholding

Hysteresis

Flow Chart



Gaussian Smoothing

Initially the given image is converted into a gray scale image, then by creating a gaussian operator and by applying this operator on the gray scale image gives out a image which is smoothed and the noise is decreased.





Applying Sobel operators

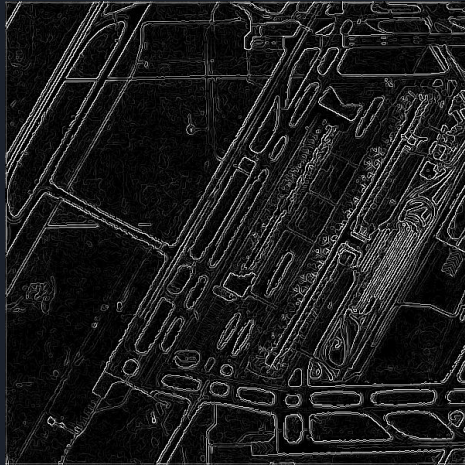
After the gaussian smoothening is done, the gradient of the image(each pixel) is found using the sobel operator on the image and convoluting it on the whole image and this gives out the gradient image of the gaussian smoothened image

Non maximum suppression

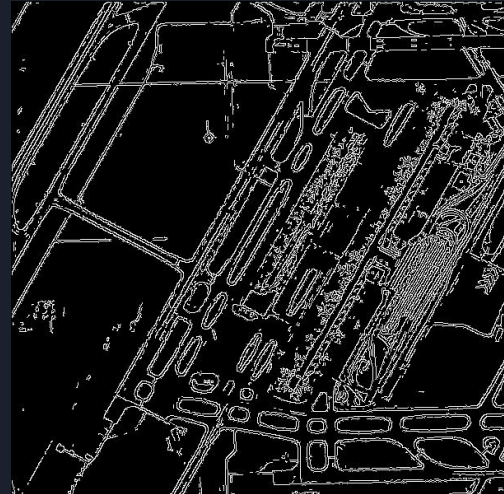
After finding the gradient of all the pixels now the gradient magnitude and direction of each pixel is known. Using this data for each pixel find the pixels which are in the direction of the gradient or opposite to the gradient . Now as only 4 directions it can check along vertical or along horizontal or along diagonals(2). Due to having only 4 options it checks the pixel in the respective direction if it's in a range and if it's intensity is greater then the pixel is minimized as it can't be an edge.

Double Thresholding And Hysteresis

After doing the Non-maximum suppression, strong edge pixels, weak edge pixels are calculated using higher threshold, lower threshold. After differentiating them each weak edge pixel is now checked if it has a strong edge pixel in it's neighborhood if it does then convert this into a strong edge pixel.



Before Hysteresis



After Hysteresis

A decorative graphic in the top-left corner consisting of a blue parallelogram and a light green parallelogram, both tilted at an angle. The background is a dark navy blue with faint, lighter blue diagonal stripes.

Test Images

A logo consisting of two overlapping parallelograms, one blue and one green, slanted to the right.

GUI

Canny Edged etection

Sigma(σ):

T1

:

T2

:

[Click here to select output file path.](#)

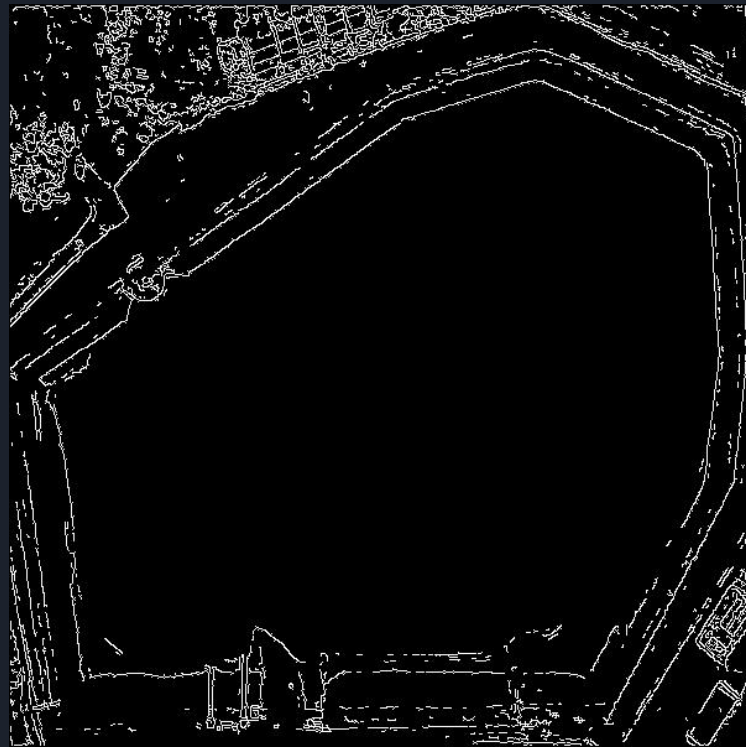
C:/Users/HP/Downloads/gnr602/output

Upload Image

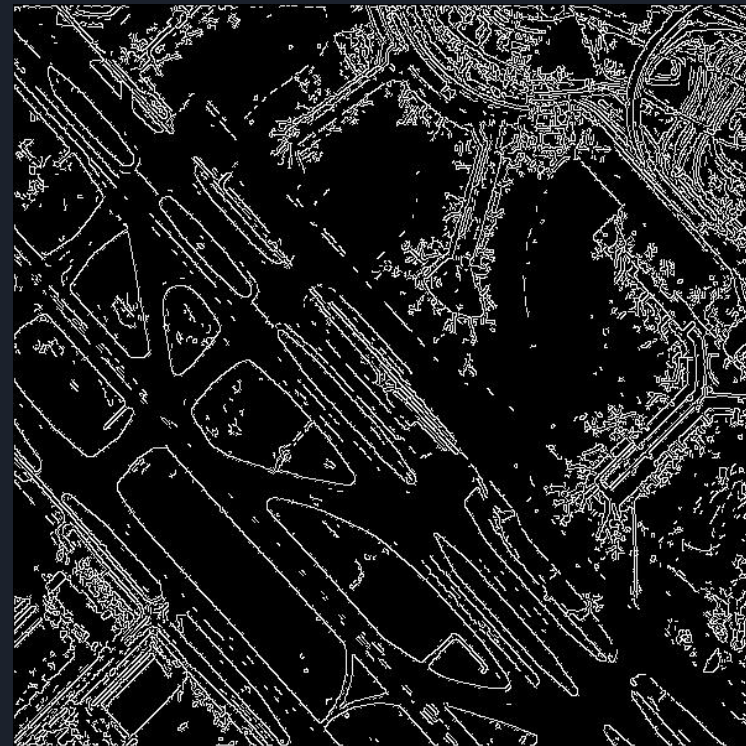
Final output GUI



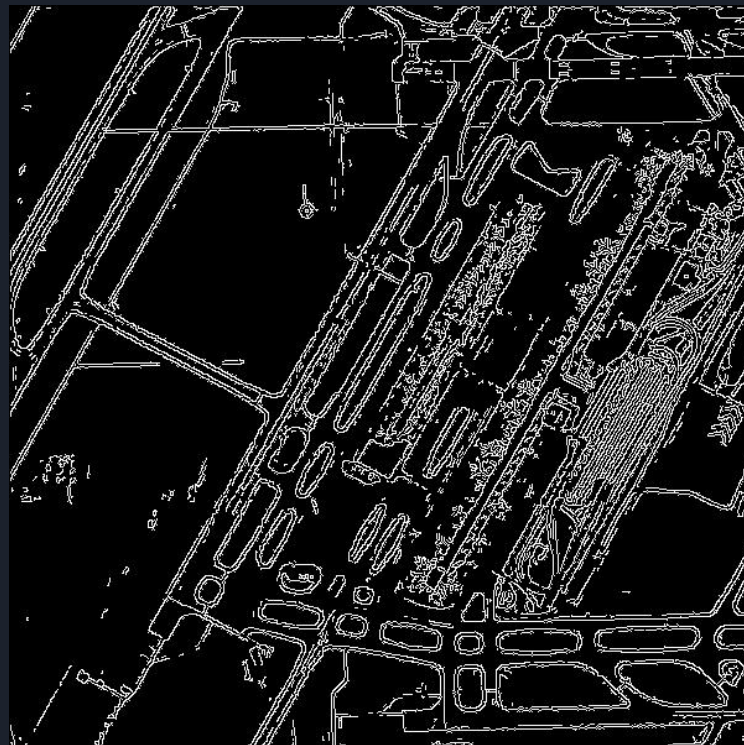
INPUT-1



INPUT-2



INPUT-3





DEMO



Thank you