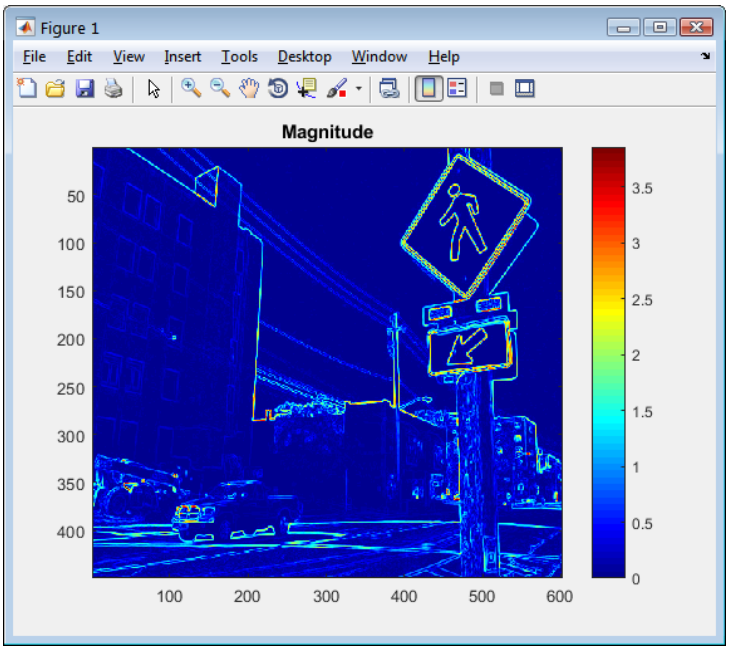
Kuan-Ping Chang
71018021
CS116 HW4

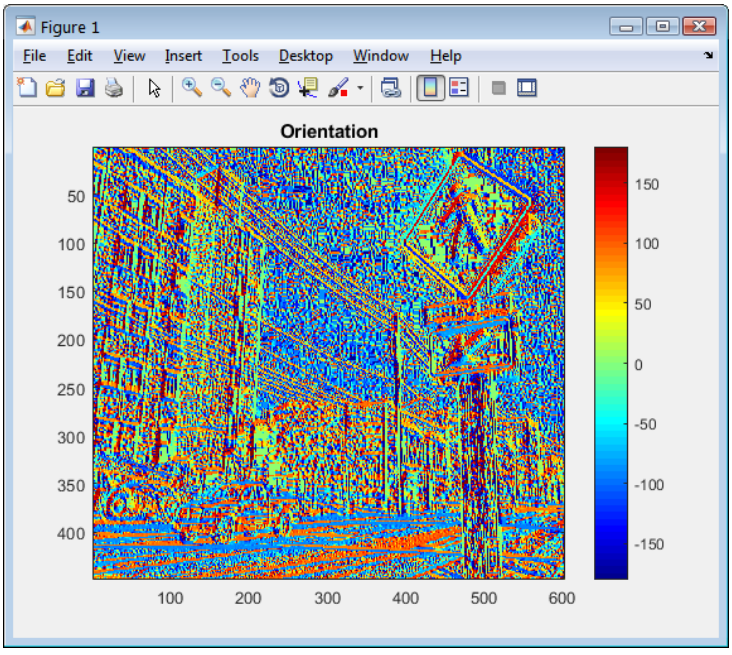
Object Detection Write Up Report

Part 1. Gradient Test

Magnitude



Orientation



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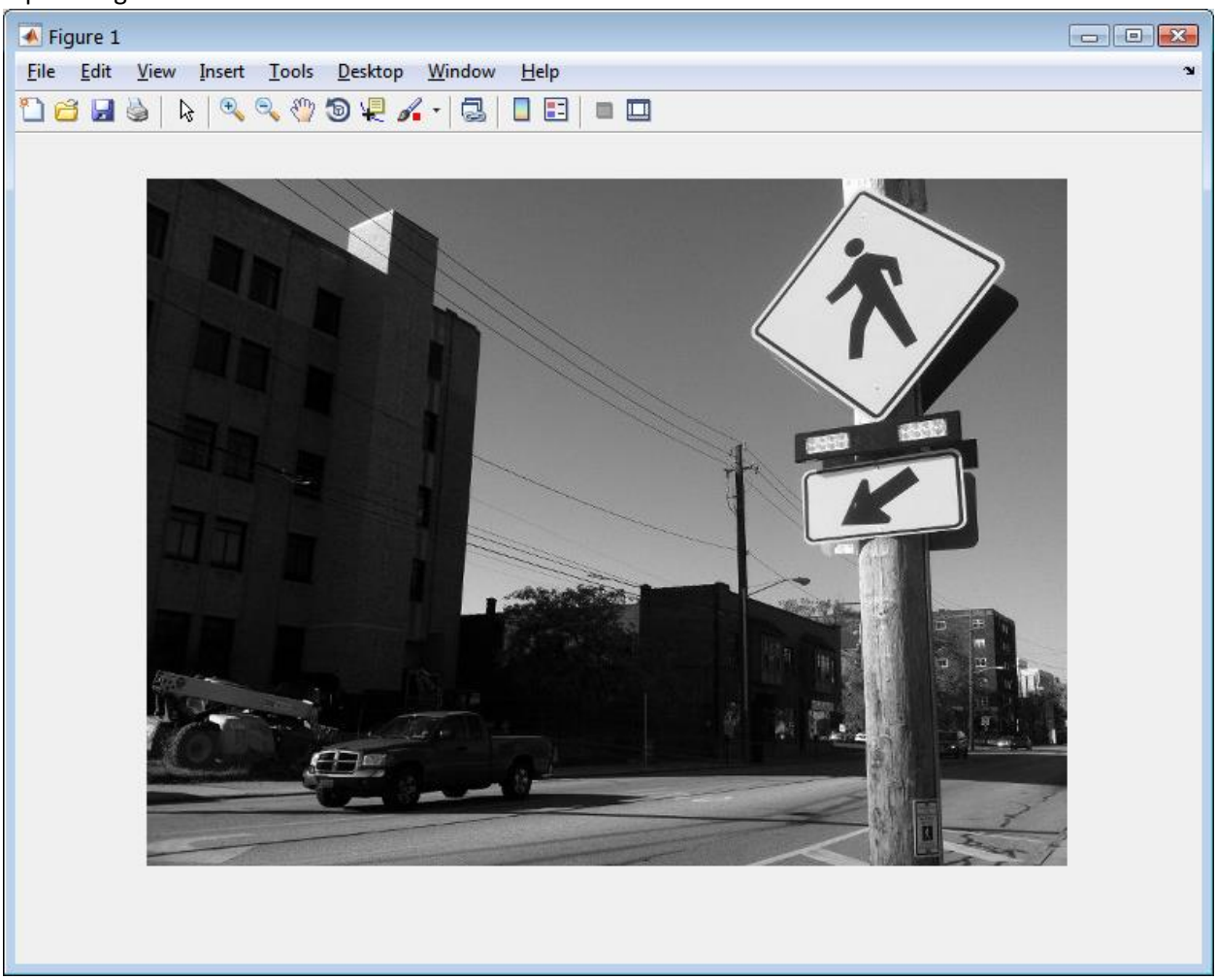
Part 2. Detection Code

Detection 1:

a) Input Image:



Clicked Positive

Clicked Negative

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b) Results: (5 images)

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**Suspecting the orientation isn't detected correctly here…the sign is tilted in a rather slant angle. However, If we make the size of the detection box bigger (changing to *16 in script)…

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The block size gets much bigger.

Input:

Input is again: The Pedestrian Sign

 For Positive and  For Negative

Result:

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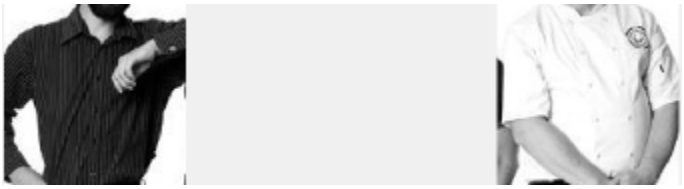
Detection 2:

Face Detection Test: Base Test Selected image

Clicked:

Positive:

Negative: (Clicked 2)



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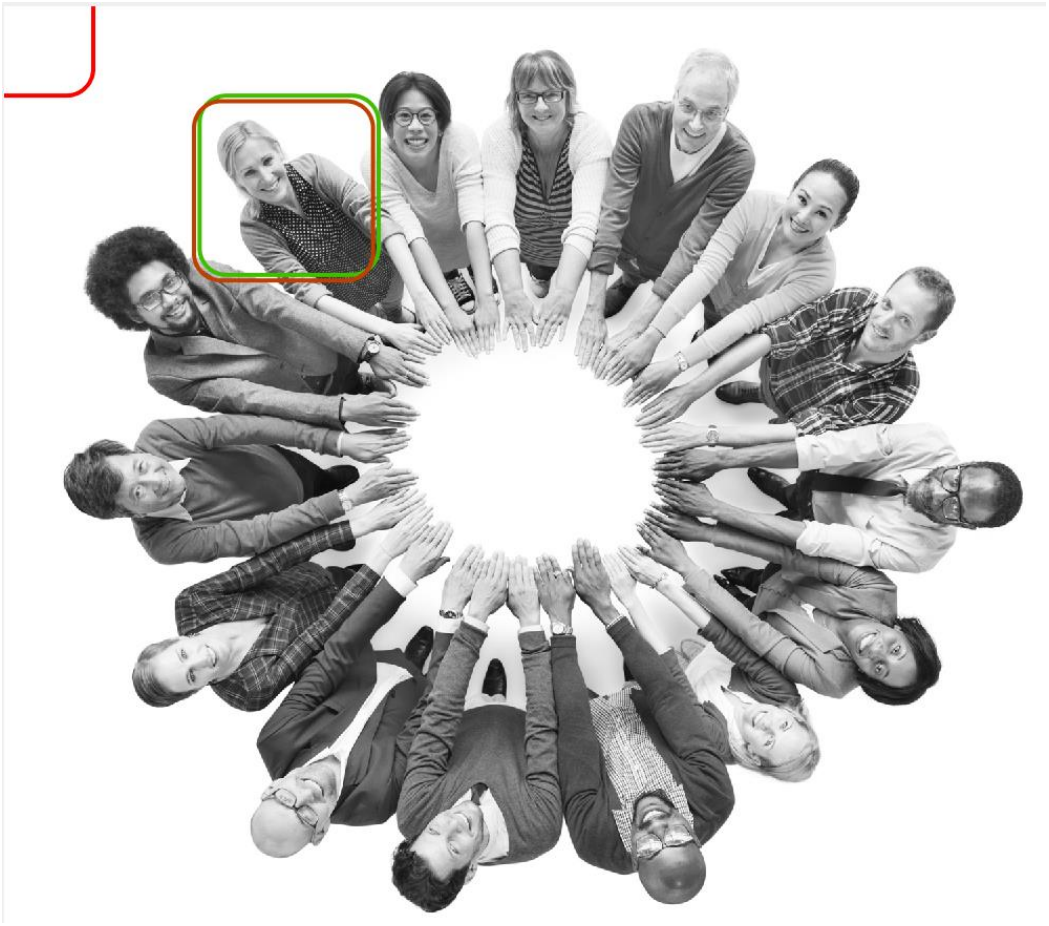
Results:



For some reasons these faces aren’t recognized as well in bracket size 8 (above is 16).

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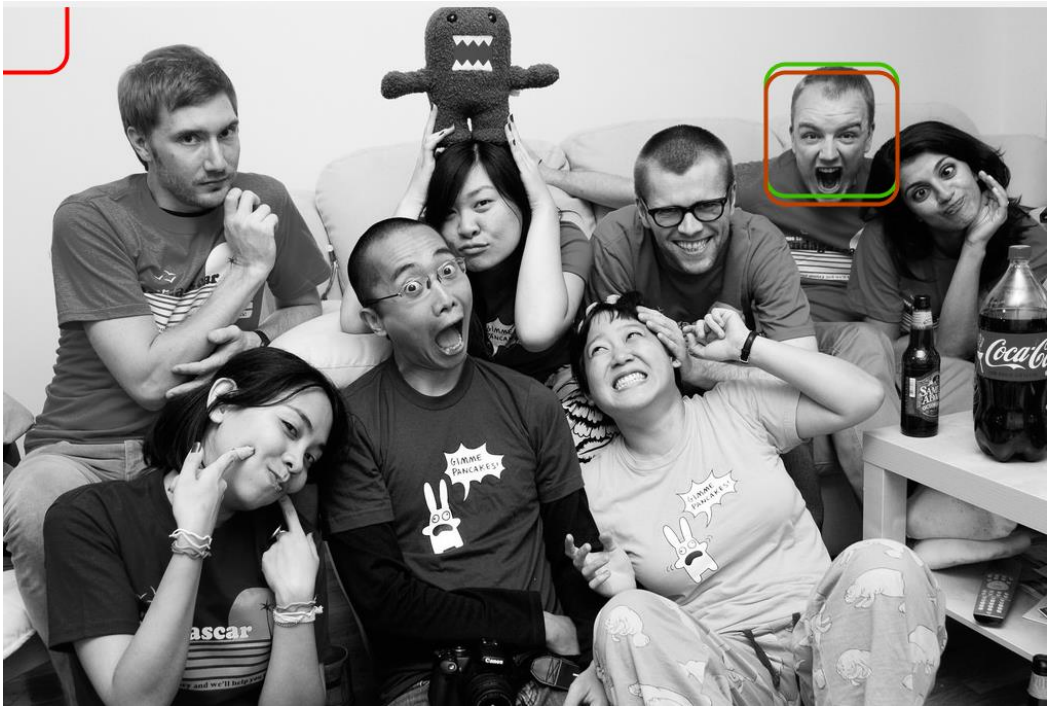
After adjusting the bracket size by ½ (original 16) with the same positive and negative:



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Discussion:

The size of the detection patch affects how objects are recognized in the detected image. The size of the patch sets a boundary and allows the detection to be conducted to find similar matching size image. If the size of the patch isn't large enough to fit the recognizing part of the image then the target image part will be harder to locate. In addition, if the patch is too large, the detecting part of the image will contain unnecessary information that will affect the detection result. The final result of detection 2 (above) shows that changing the size of the detection can affect accuracy of the detection.

As regarding orientation, a detection is usually successful if the detected image contains an object of approximate same orientation and magnitude. If the detector fails to detect similar images in the detected image it is usually because the target's orientation differ greatly. Example of which that shows signs of fail detection like the street sign orientation (street sign test1 and test5). Adjusting the size of the patch or changing the initial detect selection image of different orientation will help with detections.