Computer Vision
Spring 2018
Problem Set #2

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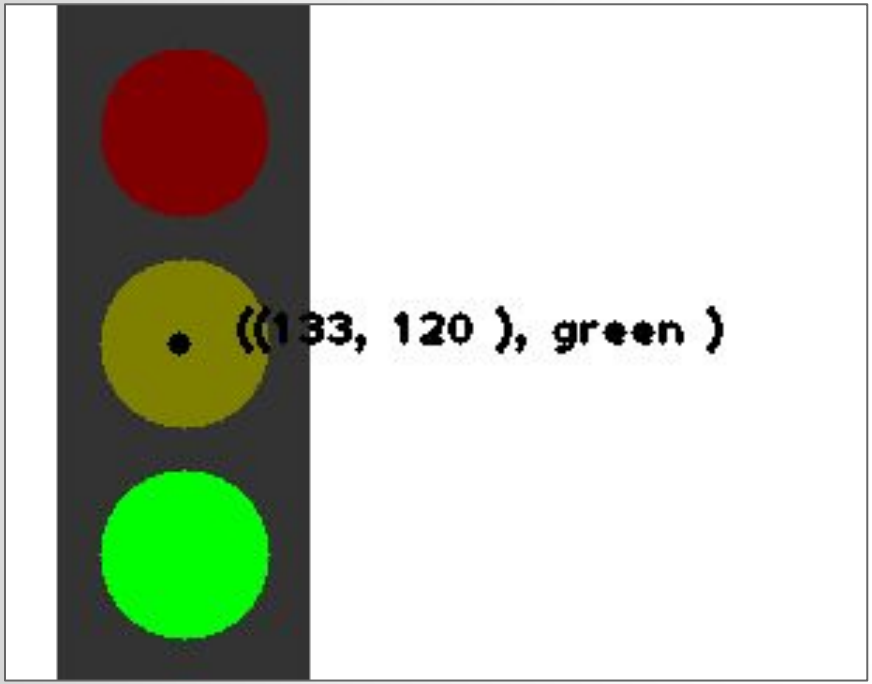
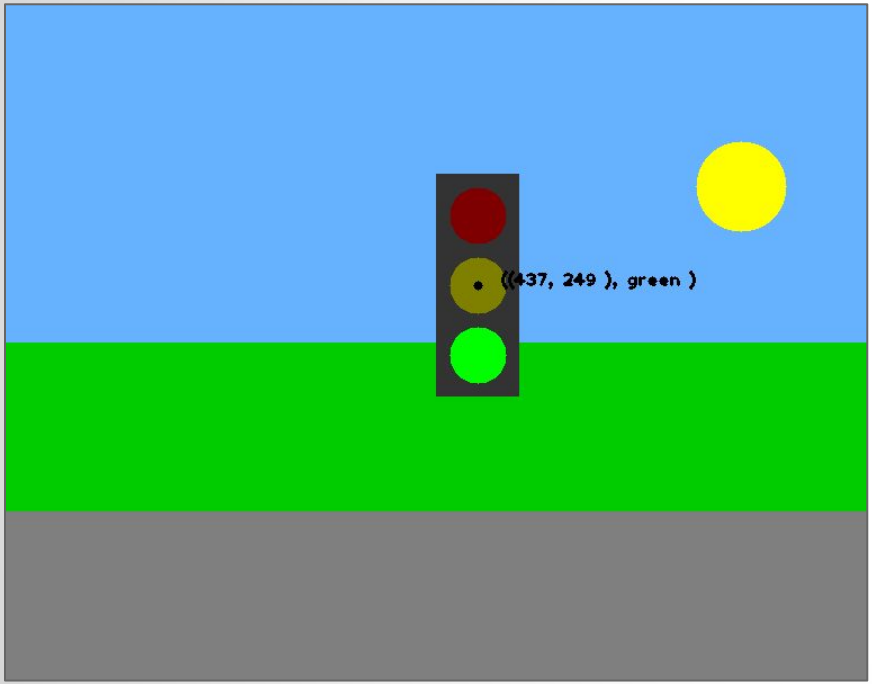
Traffic Light Detection



(133, 120) Green Light

ps2-1-a-1.png

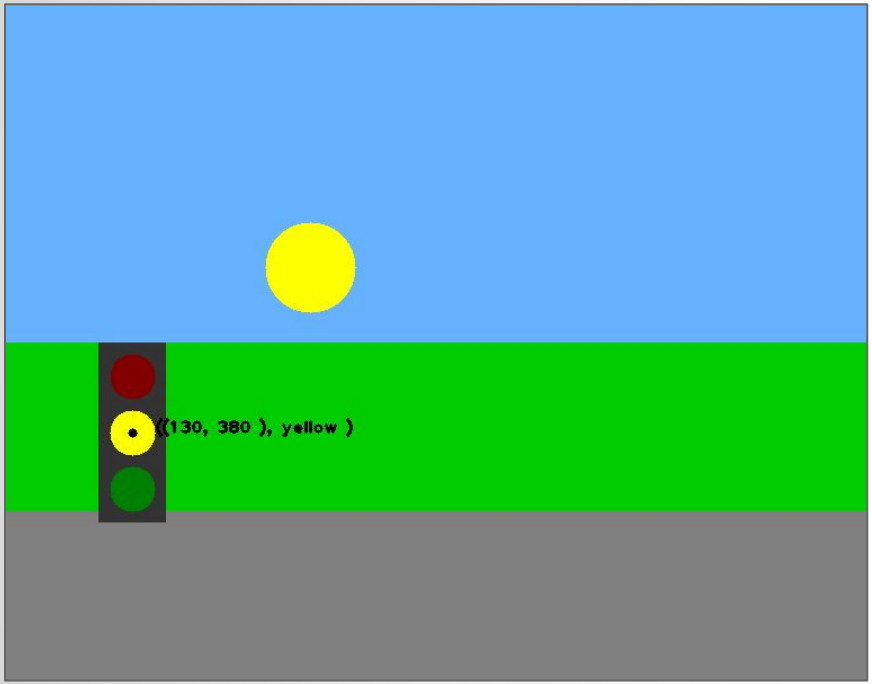
Traffic Light Detection



(437, 249) Green Light

ps2-1-a-2.png

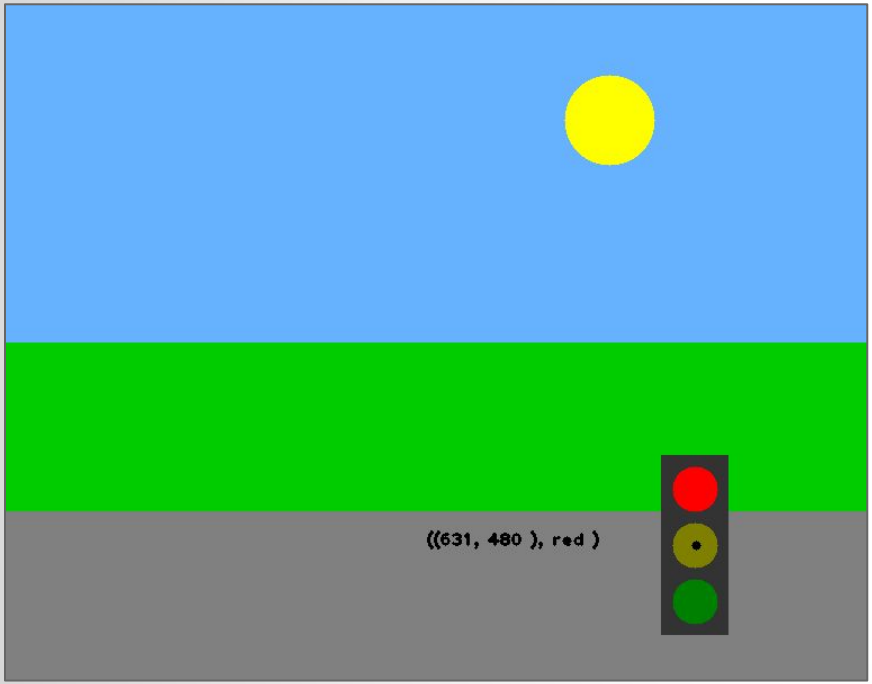
Traffic Light Detection



(130, 380) Yellow Light

ps2-1-a-3.png

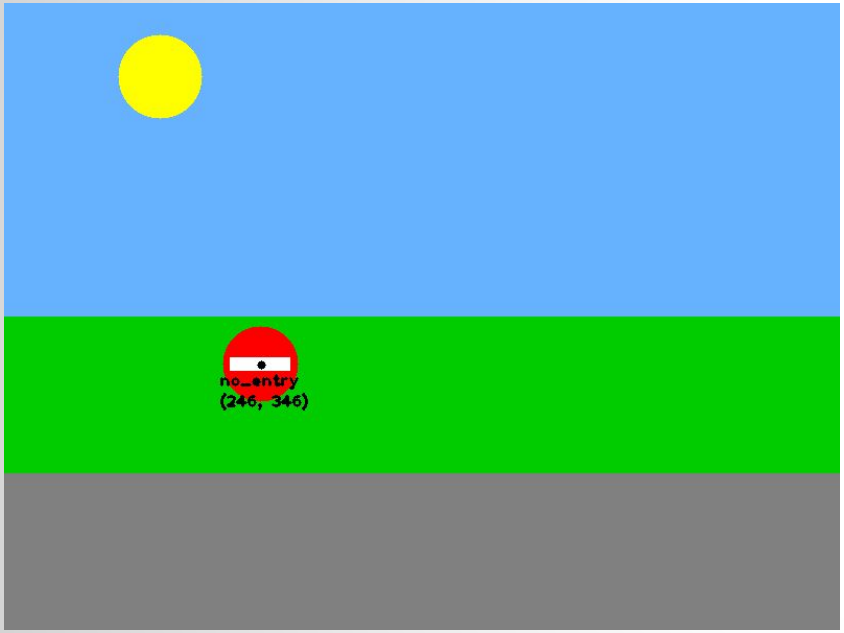
Traffic Light Detection



(631, 480) Red Light

ps2-1-a-4.png

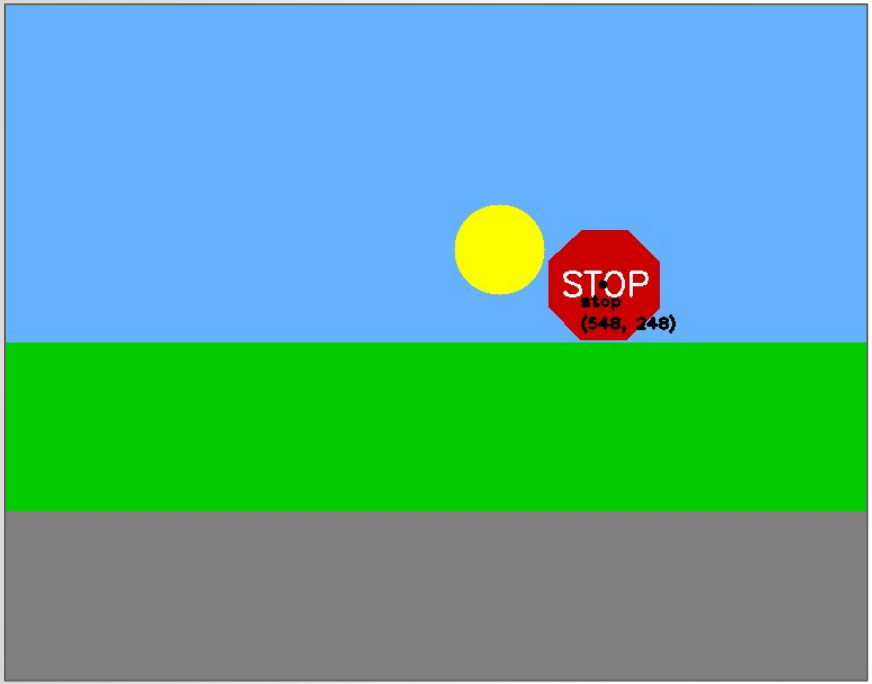
Traffic Sign Detection - Do not enter



(246, 346)

ps2-2-a-1.png

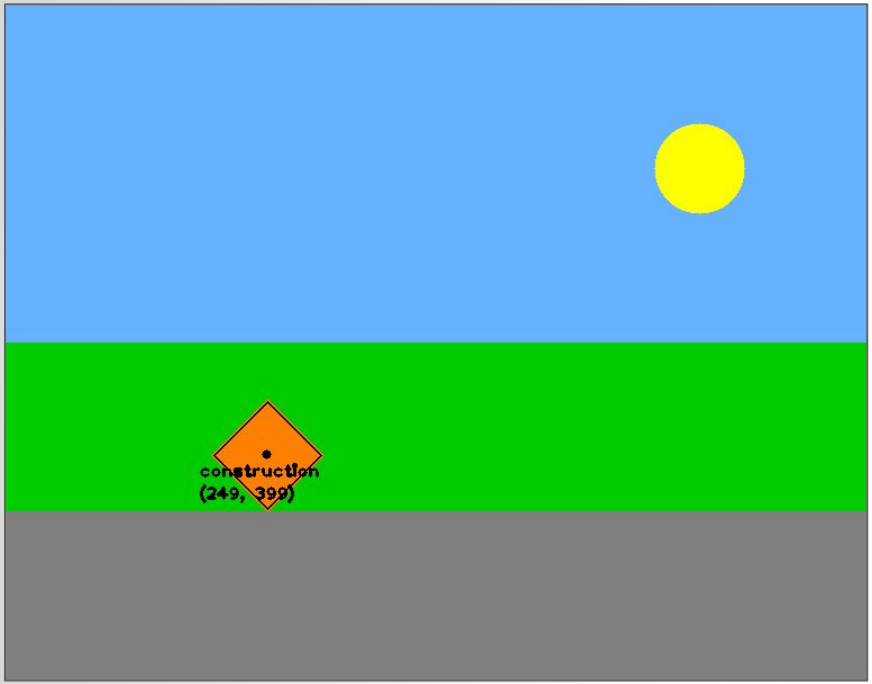
Traffic Sign Detection - Stop



(548, 248)

ps2-2-a-2.png

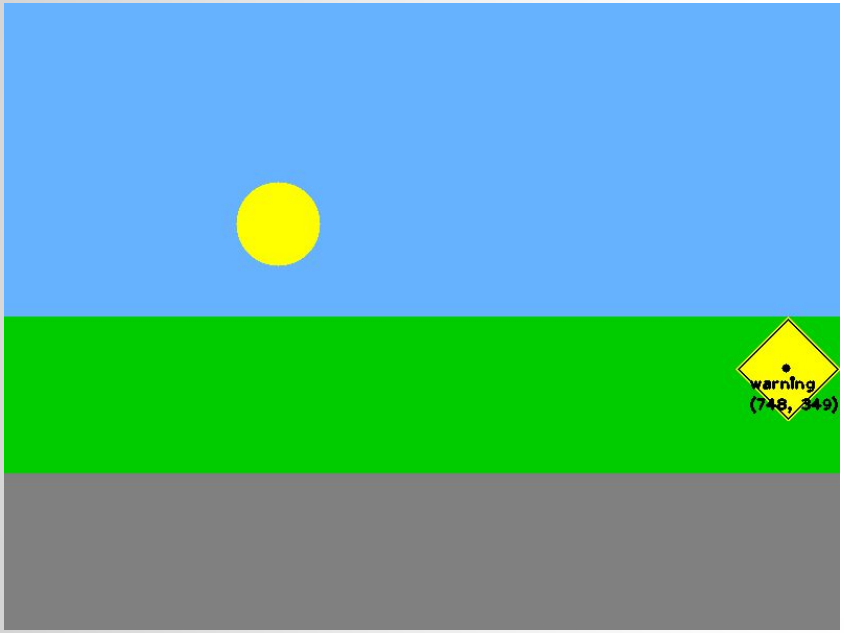
Traffic Sign Detection - Construction



(249, 399)

ps2-2-a-3.png

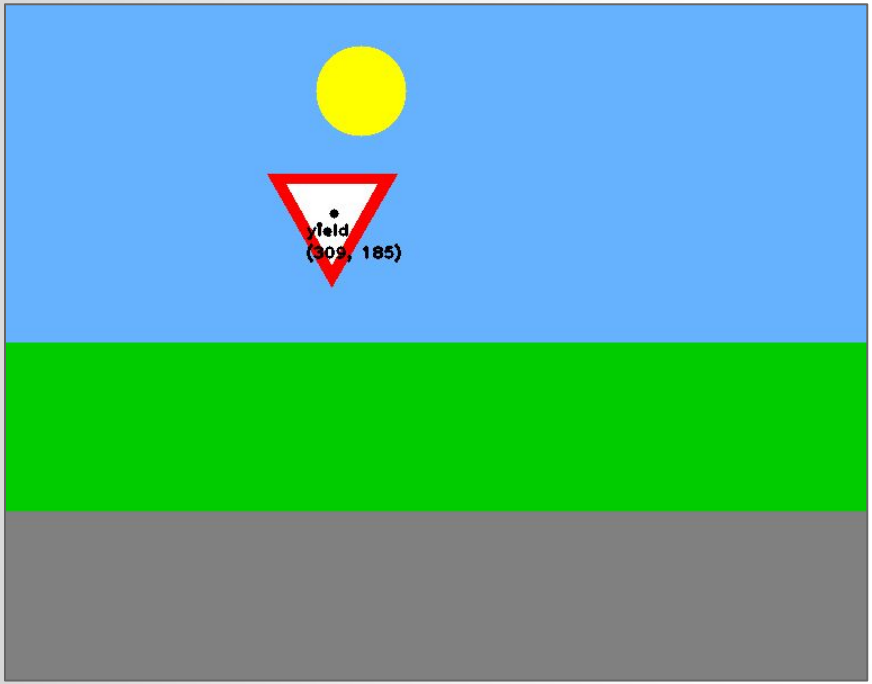
Traffic Sign Detection - Warning



(748, 349)

ps2-2-a-4.png

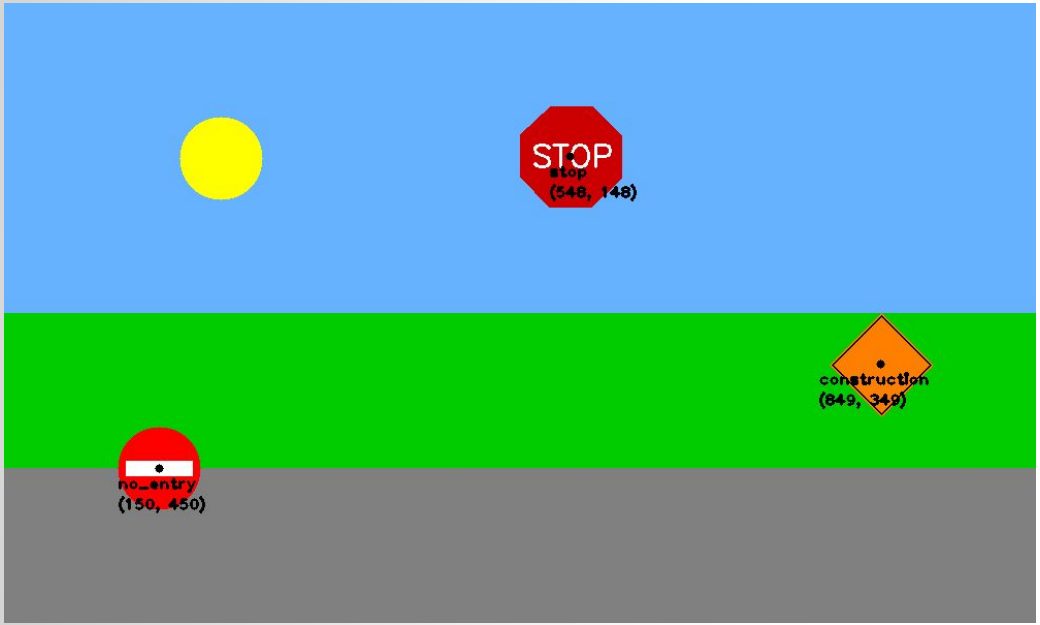
Traffic Sign Detection - Yield



(309, 185)

ps2-2-a-5.png

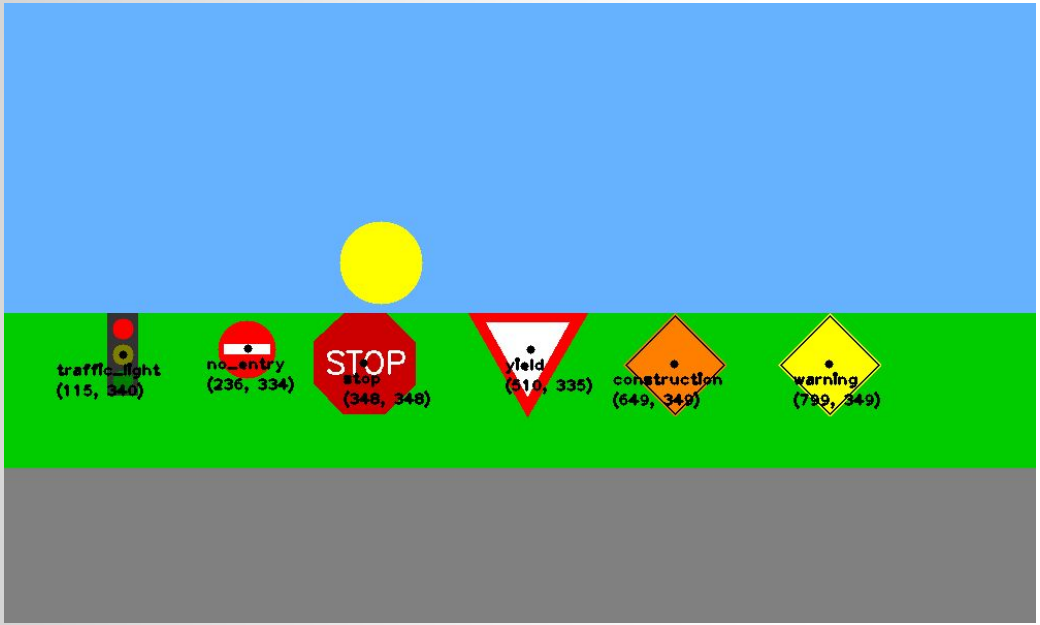
Multiple sign detection



(548, 148) Stop Sign
(849, 349) Construction
(150, 450) No Entry

ps2-3-a-1.png

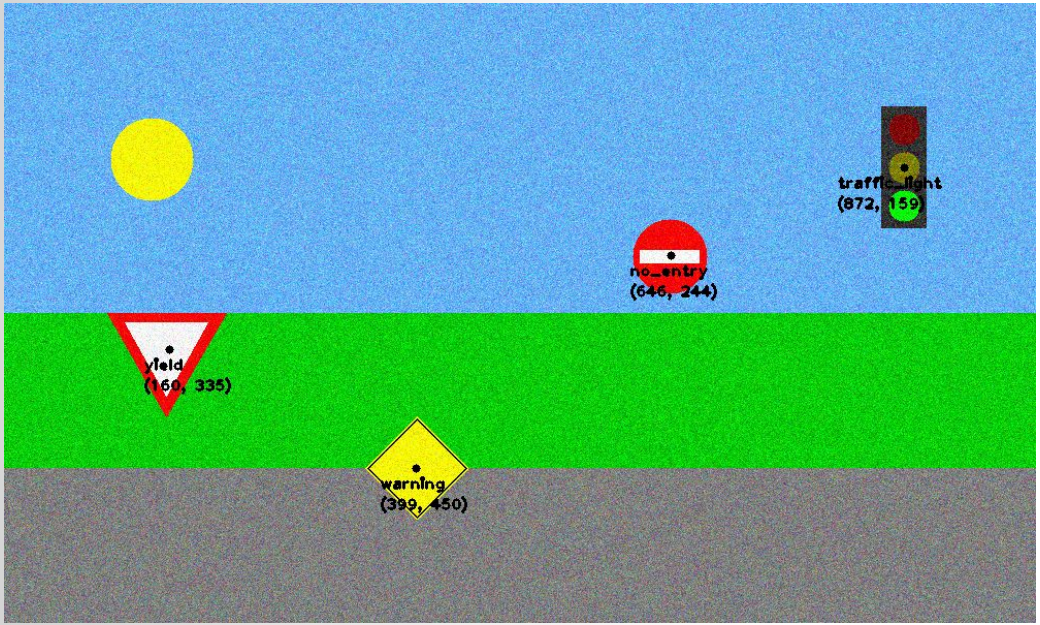
Multiple sign detection



(115, 340) Traffic Light
(236, 334) No Entry
(348, 348) Stop Sign
(510, 335) Yield
(649, 349) Construction
(799, 349) Warning

ps2-3-a-2.png

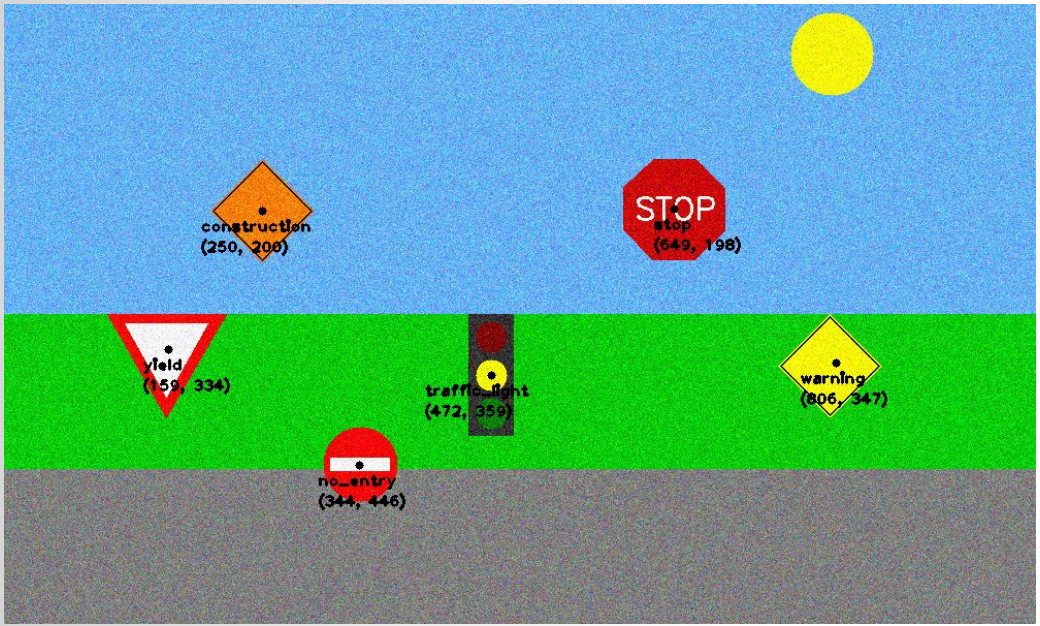
Multiple sign detection with noise



(160, 335) Yield
(399, 450) Warning
(646, 244) No Entry
(872, 159) Traffic Light

ps2-4-a-1.png

Multiple sign detection with noise



(159, 334) Yield
(250, 200) Construction
(344, 446) No Entry
(472, 359) Traffic Light
(649, 198) Stop
(806, 347) Warning

ps2-4-a-2.png

Challenge Problem

Input image

Output image

Stop (241, 555)

Challenge Problem

(276, 96) No Entry
(184, 128) Traffic Light

The traffic light was detected as a false positive.

Input image

Output image

Challenge Problem

Input image

Output image

(127, 151) Warning
(159, 83) Stop

The stop sign was detected as a false positive

Challenge Problem

Input image

Output image

(280, 86) No Entry
(88, 241) Warning
(158, 131) Stop
(260, 153) Traffic Light

The stop sign is not centered, and there is a traffic light being found when there is not one present.

Challenge Problem

Input image

Output image

(195, 93) Stop

This is 100% incorrect, when running images independently, they do work, but when combined they fail

Challenge Problem

Input image

Output image

(132, 108) No Entry
(259, 188) Stop

There is a stop sign, although the midpoint is not correct.

The Yield sign is not detected at all

The Construction sign is indicated as a no entry sign.

Challenge Problem

Describe what you had to do to adapt your code for this task. How does the difference between simulated and real-world images affect your method?

If you used other functions/methods, explain why that was better(or why your previous implementation did not work)

I made minor changes to my code to catch scenarios where things weren't found and exception weren't being caught. I find that the simulated images were a lot easier to detect as there is less image noise in the method that I chose. I went the route of image masking, which is easier to do if the color ranges are limited, but when dealing with real life images, the color range is much larger due to lighting conditions. I spent a long time on this assignment, and found that all of my images that had multiple traffic signs in real world images would fail.