

CarND-Term1

March 31, 2017

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In [1]: # Week 1.1-ACR
        # Do relevant imports
        import matplotlib.pyplot as plt
        import matplotlib.image as mpimg
        import numpy as np

In [15]: # Read in the image
         image = mpimg.imread('test.jpg')

In [16]: # Grab the x and y sizes and make two copies of the image
         # With one copy we'll extract only the pixels that meet our selection,
         # then we'll paint those pixels red in the original image to see our selection
         # overlaid on the original.
         ysize = image.shape[0]
         xsize = image.shape[1]
         color_select= np.copy(image)
         line_image = np.copy(image)

In [17]: # Define our color criteria
         red_threshold = 200
         green_threshold = 200
         blue_threshold = 200
         rgb_threshold = [red_threshold, green_threshold, blue_threshold]

In [36]: # Define the vertices of a triangular mask.
         # Keep in mind the origin (x=0, y=0) is in the upper left
         # MODIFY THESE VALUES TO ISOLATE THE REGION
         # WHERE THE LANE LINES ARE IN THE IMAGE
         left_bottom = [150, 539]
         right_bottom = [950, 539]
         apex = [800, 539]

         fit_left = np.polyfit((left_bottom[0], apex[0]), (left_bottom[1], apex[1]), 1)
         fit_right = np.polyfit((right_bottom[0], apex[0]), (right_bottom[1], apex[1]), 1)
         fit_bottom = np.polyfit((left_bottom[0], right_bottom[0]), (left_bottom[1], right_bottom[1]), 1)

In [37]: # Mask pixels below the threshold
         color_thresholds = (image[:, :, 0] < rgb_threshold[0]) | \
                             (image[:, :, 1] < rgb_threshold[1]) | \
                             (image[:, :, 2] < rgb_threshold[2])
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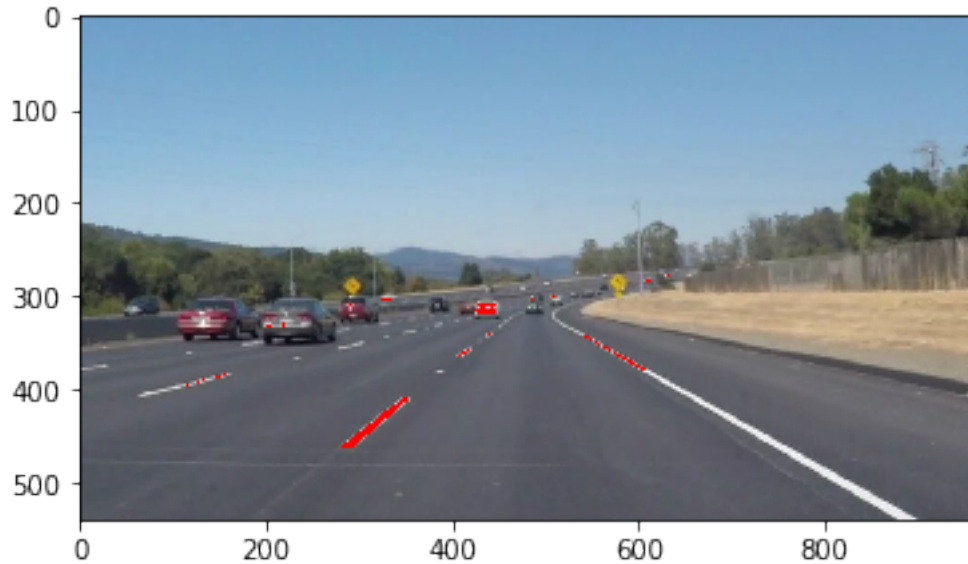
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In [38]: # Find the region inside the lines
XX, YY = np.meshgrid(np.arange(0, xsize), np.arange(0, ysize))
region_thresholds = (YY > (XX*fit_left[0] + fit_left[1])) & \
                    (YY > (XX*fit_right[0] + fit_right[1])) & \
                    (YY < (XX*fit_bottom[0] + fit_bottom[1]))

# Mask color selection
color_select[color_thresholds] = [0,0,0]
# Find where image is both colored right and in the region
line_image[~color_thresholds & region_thresholds] = [255,0,0]

In [39]: # Display our two output images
plt.imshow(color_select)
plt.imshow(line_image)
plt.show()

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In [ ]:

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