Project 1 - Finding lanes on the road report

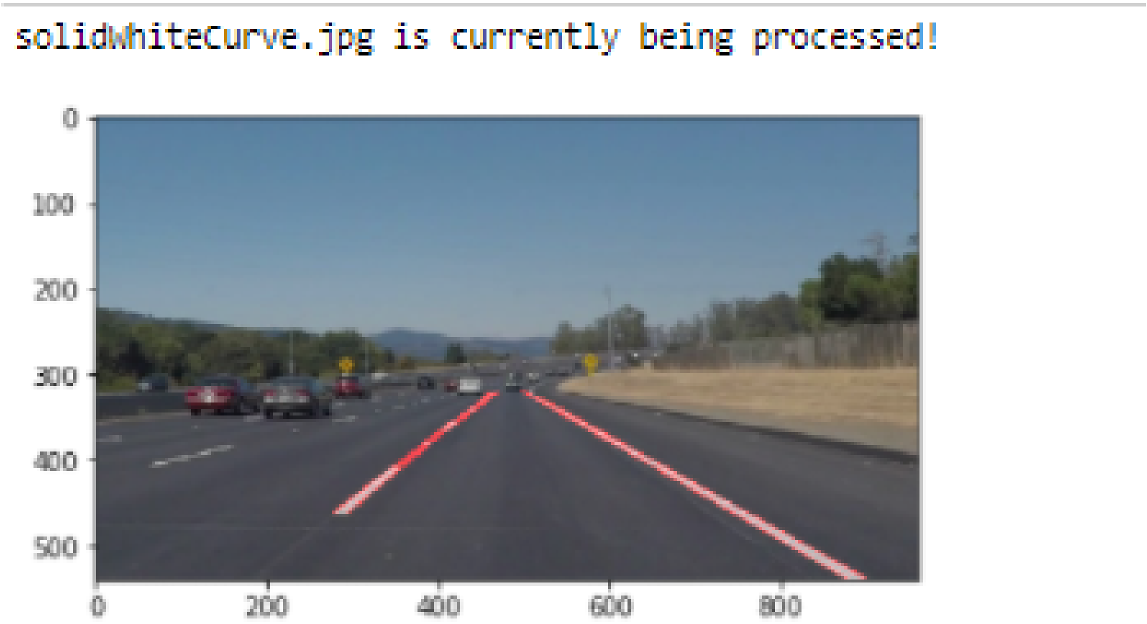
1. Describe your pipeline.

I named my function process_image_pipeline, and it consisted of numerous steps. I first started by converting my images to grayscale. Then, I used Gaussian blur, which applies a gaussian noise kernel to the image, and I used the helper function provided. After this, I set up a canny transform for my image to make sure the edges are detected properly. I assigned the image dimensions with an x and y variable. Then I defined some vertices with various numbers. This was the region of interest which is the region that was supposed to be defined by my vertices. Then I set up the weighted image to be processed.

To draw a single line on the left and right lanes, I modified the draw_lines() function by making changes to the slope. The slope is what will be used to draw the left and right sides of the line. The left lane of the road is negative, and the right lane of the road is positive. I first started by defining a list to put all of my values in for the left lanes and the right lanes. If the value for the slope is negative then all of them are appended to the "leftLane_list" list. And if the values are positive they are appended to the "rightLane_list" list. After this, I defined the image shape to be my max value, and a value of 400 to be my min value. Then I found my x1, y1, y2, and x2 values and did cv2.line(img, (x1, y1), (x2, y2), color, thickness) filling in the corresponding values for each.

2. Identify potential shortcomings with your current pipeline

One potential shortcoming would be what would happen when my solidWhiteCurve.jpg image wasn't detected properly. It was the only one out of all my images to behave this way.



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solidWhiteCurve.jpg is currently being processed!
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This would probably be because I set my hough parameters incorrectly. Another shortcoming could be that this program won’t work well with curved lines on roads when turning.

3. Suggest possible improvements to your pipeline

A possible improvement would be to modify my parameters so all of my images are 100% accurate. As of right now some of my images are lacking in proper line detection, but it is a satisfactory amount. Another potential improvement could be to make my code more advanced so that it will be able to detect lights at night under a brightly lit road.