

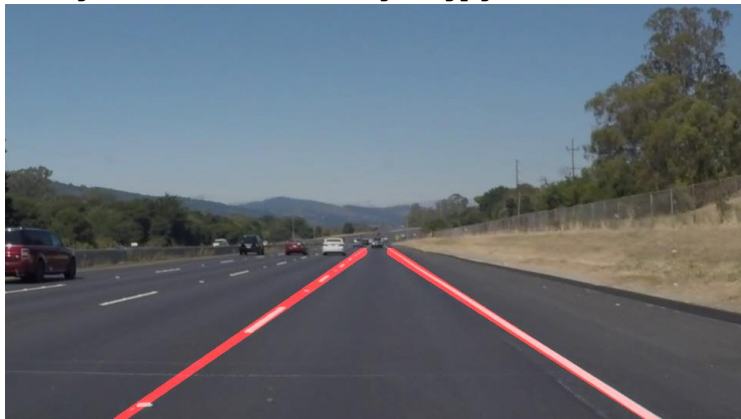
Finding Lane Lines on the Road

Output Image by Pipeline

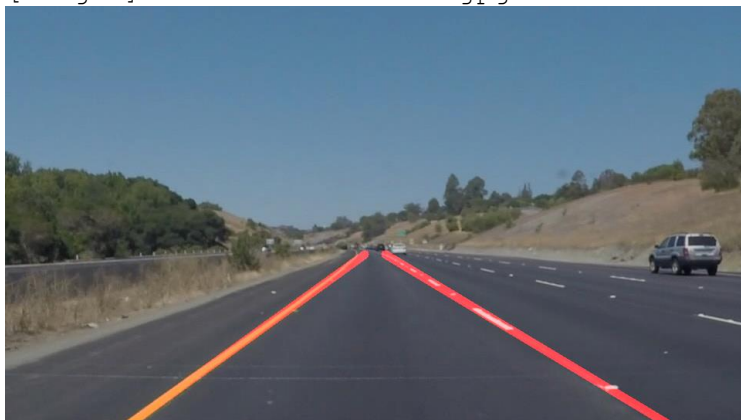
[image1]: solidWhiteCurve.jpg



[image2]: solidWhiteRight.jpg



[image3]: solidYellowCurve.jpg



[image4]: solidYellowCurve2.jpg



[image5]: solidYellowLeft.jpg



[image6]: whiteCarLaneSwitch.jpg



Reflection

1. Description :

My pipeline consisted of 5 steps. First, I converted the images to grayscale, then I blurred the grayscaled image using Gaussian blur function so that noises get suppressed, then I performed canny edge detection on the blurred image to find out the edges present in the image, then I applied region masking so that only required edges of

the desired lanes are present in the image, then I applied Hough transform to join the dots to form a single line on each side and used `cv2.addWeighted` function to superimpose the resultant marked lane lines on the original image.

In order to draw a single line on the left and right lanes, I modified the `draw_lines()` function by extracting out the left lane points and right lane points from the list of the lines provided by the hough transformed image by passing it through a conditional filter (if $\text{slope} > 0.5$ then points belong to right lane else if $\text{slope} < -0.5$ then points belong to left lane), then coefficients of both lane is calculated using `np.polyfit` function. For extrapolation and consistency, y coordinates for both the lanes were kept same (max & min), and x coordinates were calculated according to the formula ($x = (y - c) / m$), and the corresponding lane lines were drawn on the image.

2. Shortcomings :

One potential shortcoming would be what would happen when pipeline failed on the challenge video. I found out that because of the more curviness of the lanes and shadows on lane lines, the pipeline was unable to detect the lanes.

3. Improvements :

A possible improvement would be to use a HSL and HSV colorspace for the challenge video, and for curve plot rather than using plotting a straight line of degree 1, curve lines of degree 3 can be used.