Finding Lane Lines on the Road

Finding Lane Lines on the Road

The goals / steps of this project are the following: * Make a pipeline that finds lane lines on the road *

Reflection

1. Describe your pipeline. As part of the description, explain how you modified the draw_lines() function.

My pipeline consisted of 6 steps.

1. First, I converted the colored image to hsv to extract out white and yellow mask respectively.
2. Then I applied the combined mask (bit-wise OR between white and yellow mask) to grayscale image with bit-wise OR.
3. Then I applied the gaussian blur with kernel size 5.
4. Applied the Canny edge detection with low threshold = 90, high threshold = 190.
5. Then I created a polygon with defined vertices and created a quadrilateral region of interest.
6. After this I applied the hough lines to get the lines and modified the draw lines function to extrapolate the lines.

In order to draw a single line on the left and right lanes, I modified the draw_lines() function by first I separated the x and y points of left lines and right lines on the basis of slope. I also filtered out the lines with slope close to 0 in order to avoid horizontal lines.Then I used all these points to find the slope and Y intercept using the np.polyfit function for right and left lines respectively.Then I used the line equation y=mx+c to plot the extrapolated lines by taking predetermined y points.

If you'd like to include images to show how the pipeline works, here is how to include an image:

2. Identify potential shortcomings with your current pipeline

One potential shortcoming would be what would happen when curved lines are encountered, I tried to run the pipeline on a road with curves and it didn't work properly.

Another shortcoming could be when the shades change then the lines tend to get distorted.

Another shortcoming is the extrapolated lines tend to wobble a lot, which I was not able to improve.

3. Suggest possible improvements to your pipeline

A possible improvement would be to stabilize the wobbling of the extrapolated lines by improving the draw_lines function.

Another potential improvement could be to experiment changing the image contrast so that edge detection is improved.