1. Pipeline.

My pipeline consisted of 7 steps.

Step1:Convert images to grayscale.

Step2: Gaussian smoothing

Step3: Canny edge detection

Step4: Find out the mask edges image

Step5: Apply hough transform and find the lane lines

Step6: Modify draw_lines() function with the following steps:

step6.1: define the leftBottom、leftTop、rightBottom、rightTop points initialized with the roi boundary points.

step6.2: during the loop, first exclude the horizontal lines with the requirement abs(y2-y1)<10

step6.3: separate the lines into left and right.

step6.4: compare the current line with the the four points defined above to find out the leftLine and rightLine across the lane line.

step6.5: finally,extend the bottom points to the image bottom line.

Here is the example of the modified draw_lines():

1. Raw lines

2.Solid line

Step7. Return the result image

2.Shortcomings

One obvious shortcoming is that the drawed solid line is on the outter edge of the lane lines instead of being in the middle.

Another shortcoming is that it can’t be used as a universal method to find the lane lines because the parameters were fine-tuned.

3. Suggest possible improvements.

A possible improvement would be to average the segment lines to draw the left line and right line in the middle of the lane lines.

Another potential improvement could be to fine-tune the parameters dynamically during processing the frames.