

Finding Lane Lines on the Road

Lijun Xue

Reflection

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

My pipeline consisted of 5 steps.

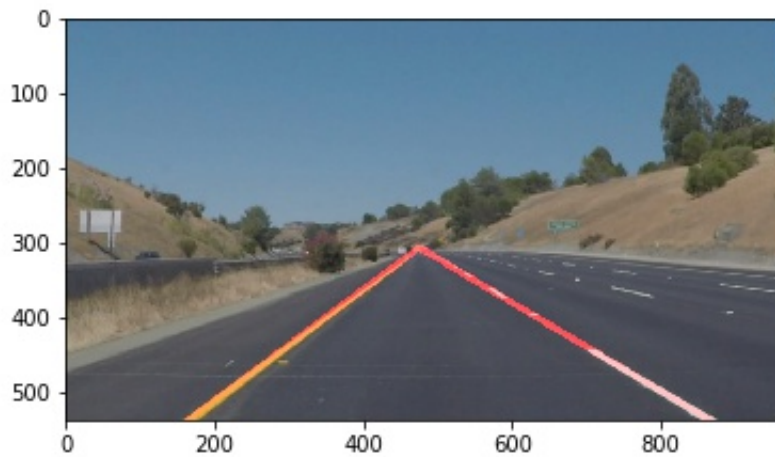
First, I converted the images to grayscale, it can help reduce the overall computation complexity. Then I applied gaussian blur on the image to reduce noise and make the whole image more smooth. After that, I applied Canny function on the image to find out all the edges and also, I did masking on the image, make only the target area is available to the next step. By the end, I applied hough transform function on the images and get the result.

In order to draw a single line on the left and right lanes, I modified the `draw_lines()` function by divide all the lines from Hough Transform into 2 groups, left and right. The 2 lines can be regards as $y=m*x+b$, so each time I stored the m , b to left or right group, and finally get an average value to determine the single line position.

Here are some result that could show the results:







2. Identify potential shortcomings with your current pipeline

One potential shortcoming would be about the arguments, especially about the masking area. Now all the arguments I used is stable value, they can work pretty good on some cases but pretty bad on other cases. I think for a good pipeline, it would be great to be able to adjust those argument to fit different situations. For example, in the challenge video, the result can be easily affect by the shadow or other cars on the road. Also, if the brightness changes significantly on part of image may also make the pipeline lose the function.

3. Suggest possible improvements to your pipeline

A possible improvement would be to make the arguments more flexible to fit different situations. About the

masking steps, we can use some percentage numbers to calculate the masking area coordinates.

Another potential improvement could be to consider how to speed up the pipeline processing speed. If we want to make the pipeline work in real situation, the real time processing is very important. I think it might be possible to compress the original image might be a good solution to speed up.