Finding Lane Lines on the Road

The goals / steps of this project are following:

- Make a pipeline that finds lane lines on the road
- Reflect on my work in a written report

Reflection

1. **Pipeline description**

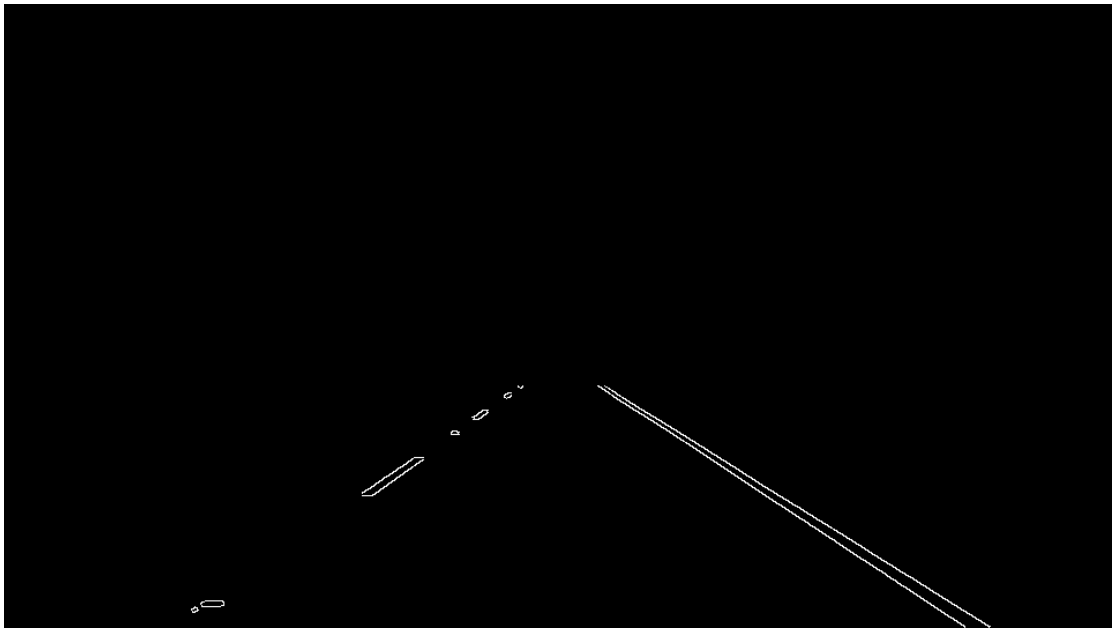
Using the following image as example, my pipeline consisted of 6 steps.

First, I converted the images to grayscale.

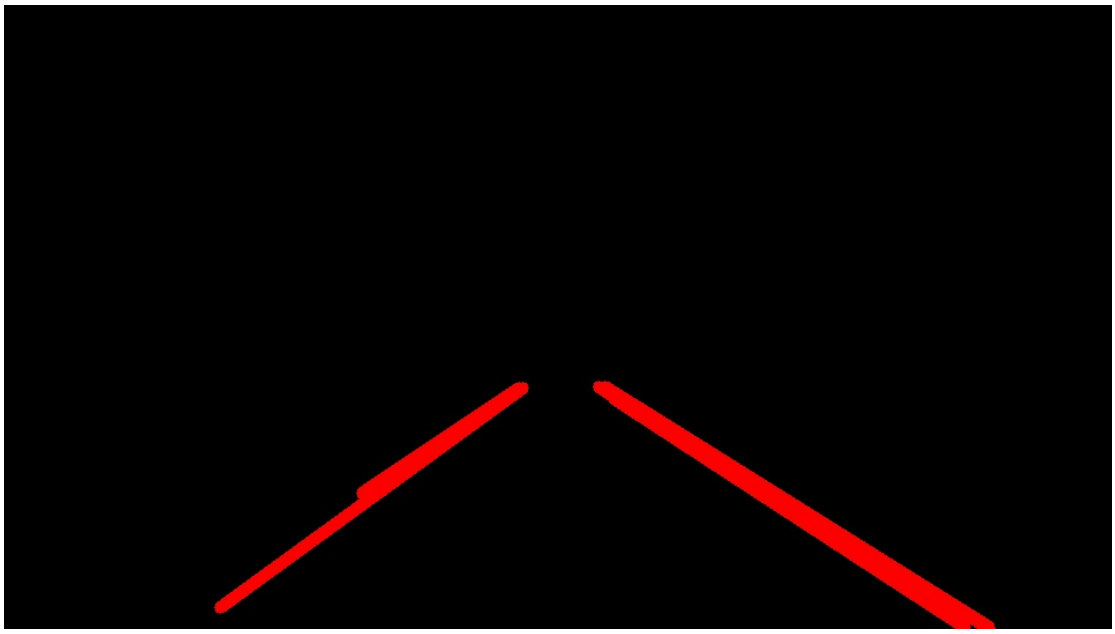
Second, I defined a kernel size which is 3 and applied Gaussian smoothing.

Third, I defined parameters for Canny and applied to the images.

Then, I defined a four sided polygon and created a masked edges.



Next, I defined the Hough transform parameters und ran Hough Transform on edge detected images.



Finally, I combined these lines into the original image to get the final image in which there are drew lane lines in the image.

In order to draw a single line on the left and right lanes, I modified the draw_lines() function by following steps.

First, I calculated the slope and intersect of each line.

Then, I sorted the lines whether it is the left line or the right line.

Next, I calculated the mean value of slope and intersect.

Finally, I defined the starting and ending point of each line and drew the lines on lanes.

2. Potential shortcoming with my current pipeline

One potential shortcoming would be, if there are cars driving on the same lane as me and not so far in front of me, it may be a problem that the cars could be detected as part of lane lines.

Another shortcoming could be, if the camera is not on a fixed position on the car, it would be difficult to define Region of Interest.

3. Suggest possible improvement to my pipeline

A possible improvement would be to use deep learning method to detect lane lines.