Finding Lane Lines on the Road

Writeup

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The goals / steps of this project are the following:

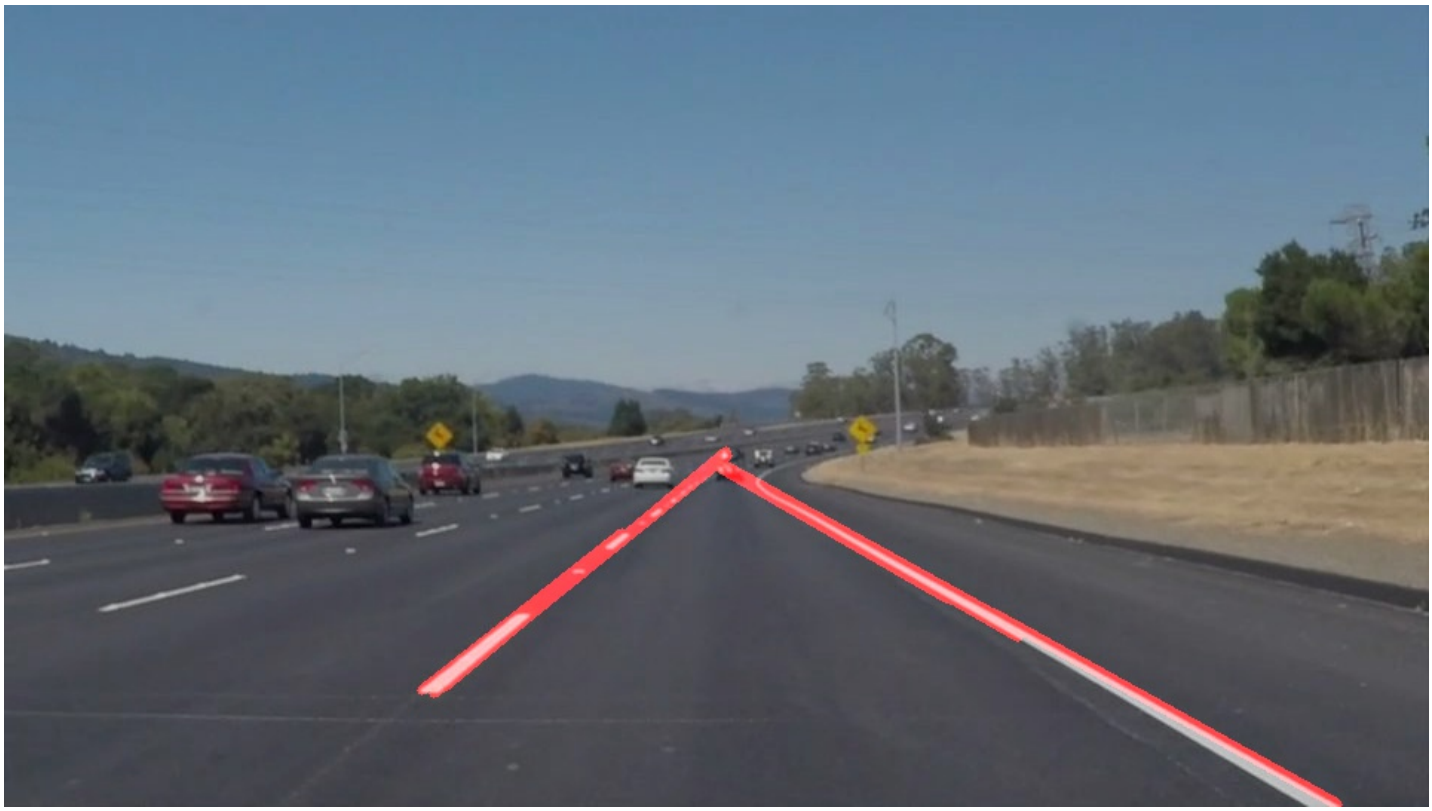
- Make a pipeline that finds lane lines on the road
- Reflect on your work in a written report

Reflection

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

My pipeline consisted of following steps:

- Grayscale the given image
- Add Gaussian blur to grayed image
- Apply canny transformation to find edges
- Mask out the unwanted region
- Apply Hough transformation



- Extend the hough transformed lines
  - Here we calculate slope and intercept a line and then we add extra points to extend it based on its slope and intercepts

- Average out the hough transformed lines to make it smooth
  - All the lines are divided into two gropus based on its slop

    - Lines having positiv slope is clubbed together
    - Lines having negative slopes are clubbed together
    - Mean of slopes and intercepts are taken of each category having different slopes
    - New points are generated based on this averaged slope and intercept

- After applying previous steps `draw_line` method is called to just draw lines.
- Same pipeline is used for Video file as well

2. Identify potential shortcomings with your current pipeline

One of the obvious shortcoming is that it only tries to find straight lines and obviously fails when there is a turn and the expected curve should be a parabola.

3. Suggest possible improvements to your pipeline

- One possible improvement would be make several small line segments instead of making a big line segment after averaging. This might solve the problem when there is a trun.
- Hough transformed line should be extended and averaged in such a way that it forms a parabola when required(in case of a turn).