Write-up “Finding Lane Lines on the Road”:

Reflection

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

   The original function draws lines over each line that was found in the original image, the input parameters were x1, x2, y1 and y2 (lines are drawn between these points), to have a solid line drawn over the image, first I defined the center x value of the image and the slopes (if the result of x2-x1 is 0, the slope value is set to 999, to avoid an error in the code), with this 2 variables is possible to decide if the values (x1, y1, x2, y2, slopes and intersection) after that, the y_min and y_max values are calculated (y_max, the maximum y value of the image and y_min the average of the minimum of y left points and y right points) finally the x_min_right, x_min_left, x_max_right and x_max_left are calculated, now we have the four points necessaries to draw lines.

   To draw lines in videos, there are 5 steps:
   - First step: the image is converted to grayscale.
   - Second step: the canny transform is applied on the grayscale image.
   - Third step: Gaussian filter is applied.
   - Fourth step: the lines are drawn on a blank space
   - Fifth step: the lines are added to the original image

2. Identify potential shortcomings with your current pipeline

   First of all, this pipeline can be improved, some appears during the videos.
   This code will probably fail if there are some lines similar to the road lanes inside the region of interest and have a different slope.

3. Suggest possible improvements to your pipeline

   - Use a filter for the slopes, this way some values can be deleted or not considered when drawing the lines, another option is to store the values and delete the extreme values after that.
   - Instead of storing points, lines can be stored and after that average the lines (I am actually not sure if this is possible, but it could be an option).
   - Instead of calculating the points for drawing the lines, given the points, command that draw the best fit line or something similar might be applied.