Finding Lane Lines on the Road

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

My pipeline consisted of 5 steps. First, I converted the images to grayscale, then I ....

1. I convert the image in grayscale.
2. Apply Gaussian, make the image smooth
3. Apply canny, make edge in image
4. Apply mask in image, obtain only area that have lane lines
5. Huage_line find lines in image. using draw line, I draw the lines (lane lines) on a blank image
6. Weighted_image merge the line image(blank image with lines) with color image

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

1. I take all the lines and divided in two part based on the slope of line (Right line and left line). We can easily see in the image that left line (positive slope) and right line (negative slope)
2. I take average of all the lines
3. I find the top point and bottom point of lines.
4. I get two point, using cv2.line I draw the line in blank image

###2. Identify potential shortcomings with your current pipeline

One potential shortcoming would be what would happen when ...

1. Image size changes
2. Lane lines do not start from bottom of image
3. One of line is missing.
4. A vehicle is containing two line (just like lane lines) in front of my vehicle.
5. A lot of ice in the road.
6. A light difference between color of road and lane lines.
7. A vehicle cover the lane lines (or running on lane lines)

###3. Suggest possible improvements to your pipeline

A possible improvement would be to ...

- I use the hard-coded value in pipe line while masking the image. It did not work well if the size of image change. We can remove it and use the value in ratio of image.
- May be, we can use different algorithm in draw_lines
- We can modify it such that it handle the case when lines not start from bottom part of image (example - challenge.mp4)
- I use single toy_y value for both lines, it would be better if we take individual top value for both the lines.

Note – In challenge.mp4, my method is not working. Because the lane lines is not starting with bottom of image. If we can modify the draw_line then it works with challenge.mp4 video. This is optional challenge. So, I am not submitting the solution. I am trying to solve it.