Finding Lane Lines on the Road

The goals of this project are the following:

1. Make a pipeline that finds lane lines on the road

2. Reflect on your work in a written report

INPUT:

OUTPUT:

Description of the pipeline:

It consists of one draw_lines() function and another main function. Set the path of the image or the video in the main function. Select the appropriate value of the variable “demo”, demo = 1 for image input and demo = 2 for video input.

All the processing is done in the draw_lines() function. Following are the steps of the pipeline.

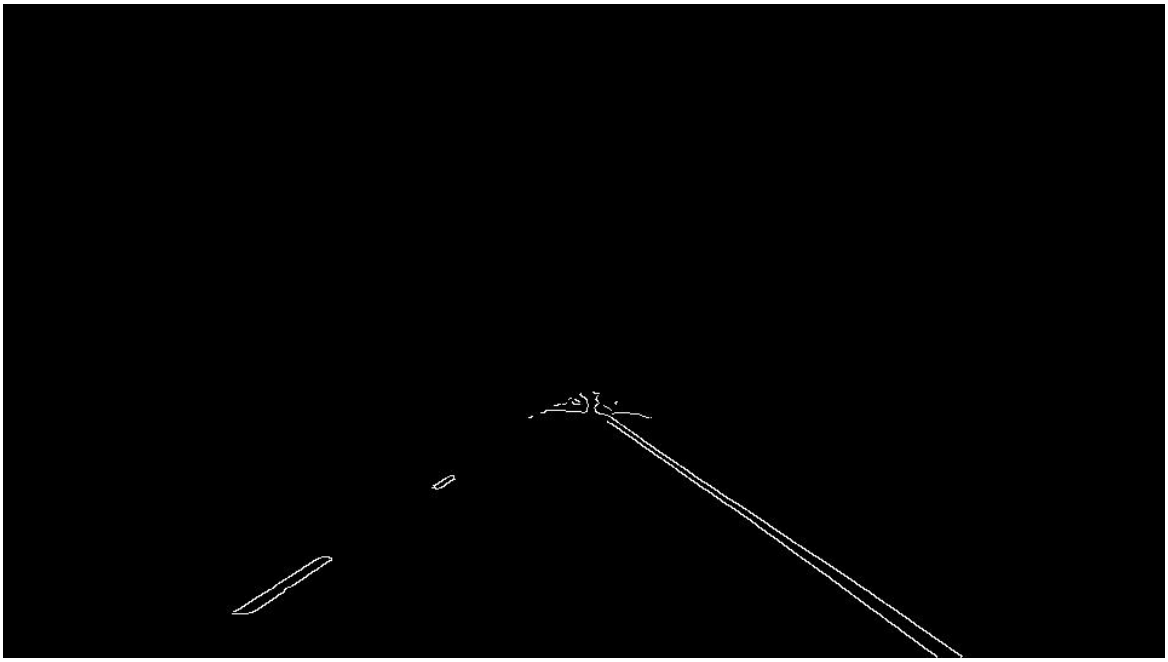
1. Import the image or frame from the video.

2. Convert frame into the grayscale.

3. Apply Gaussian blur for reducing the noise in the frame.

4. Apply Canny edge detection to find out the edges in the image.

5. Select the region of interest in which lanes lines are present.



6. Draw the line using Hough Transform.

7. Overwrite the lanes on the original frame.

Potential shortcomings of current pipeline

1. Can’t be used directly for all the videos and images, parameters tuning is necessary.
2. Sometimes, white and yellow lane lines can’t be detected due to their fade color on the road.
3. Can’t be used for curve lanes.
4. Shadows and lighting conditions affect the performance of the algorithm.
5. May not work properly for lanes with different color.
6. Due to fluctuating lines, offset values will continuously change.

Possible improvements to pipeline

1. Using HSL color space. White and yellow color can be detected better in HSL color space compared to other.
2. Depending upon the overall brightness of the image, parameters should get adjusted for better results.
3. Making the annotated lines more stable on the image.