Lane Detection Project – Shai Ben Hemo

Lane detection during the day - https://youtu.be/uHCSfWnePP0

Lane detection at night - https://youtu.be/iV5cvtQZLwU

In this project I tried to use the principles we learned so far to build a lane detection system.

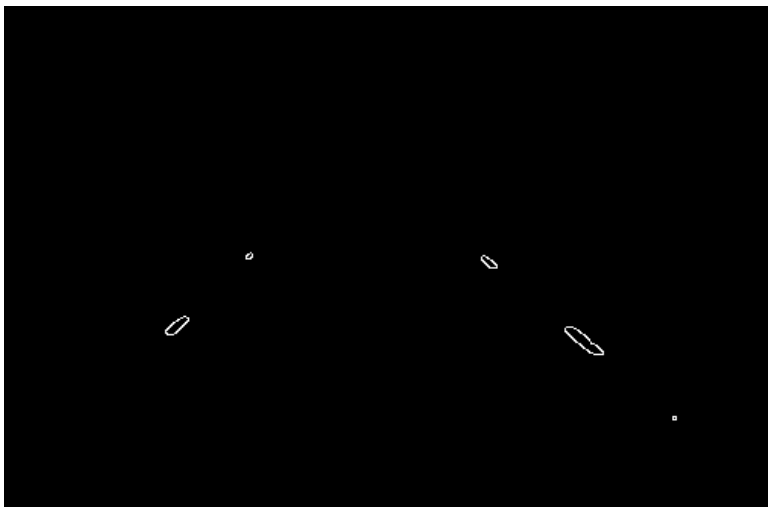
At first, I did some image processing operations to reduce the noise from the given video.

1.Converting the frame to gray -

2.Using Gaussian Blur to smooth the frame and to keep the edges -

3.Thresholding and Cropping the frame to the relevant part – I chose a threshold of 150 and cropped the frame in a trapezoid shape.

4.Using Canny detection to detect the lane edges –



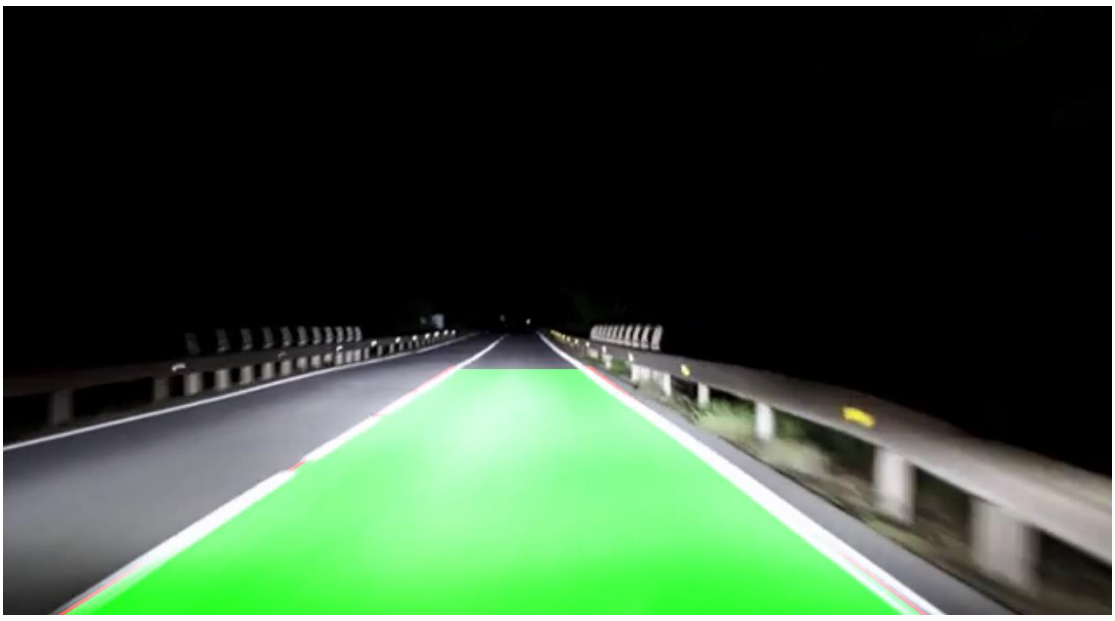
5.Hough Lines Transform + Final result -

In this part I defined two lists which contained all the detected lines – left lines and right lines, and then iterated line by line and calculated the average slope and interception with Y-axis. Finally, after calculating them the function returned the average left and right lines.

The program does not detect a perfect line in every single frame because there is a lot of noise in the background and it depends on a lot of factors, so when a line is not detected I've displayed the last line detected until a new line is detected again.

6.Night Lane Detection –

The main changes I've made in this part is changing the threshold value to from 150 to 240 because of the different light conditions and modified the dimensions of the trapezoid in the cropping part.



7.Links and etc -

Lane detection during the day - https://youtu.be/uHCSfWnePP0

Lane detection at night - https://youtu.be/iV5cvtQZLwU

Input video for day detection -
https://drive.google.com/file/d/1qxNcqjQPsiqj5z1uzSbHO_hExGDDnk3F/view?usp=sharing

Input video for night detection –

https://drive.google.com/file/d/1jYsov9fi90QRxaFNu16AaLmIl77Y4H05/view?usp=sharing