

# **Lane Keep Assist**

## **Introduction:**

*Lane Keep Assist is a burgeoning technology in today's automotive industry and it revolutionizes road safety. Since there is huge increase in the number of road accidents, Lane Keep Assist acts as a beacon of hope helping the drivers to main their lane in order to avoid accidents by reducing unintended lane departures which can be cause of danger of themselves and others as well.*

*Approximately, 11% of the accidents happen lane departures, it happens due to negligence of drivers and also due to unintended lane departures. Therefore, in order to prevent his we can implement a Lane Keep Assist Monitoring System into the automobiles in order to intimate the driver when the driver is going away from the lane intentionally or unintentionally.*

## **Steps involved:**

- 1. Converting the color image/frames into HLS scale and applies a binary mask to isolate the lane colors*
- 2. Using Canny Edge Detection technique to detect the edges in the grayscale image*
- 3. Masking the image only to focus on the Region of Interest (ROI) i.e., where the lane lines are expected to be.*
- 4. Drawing the lines on the images and filtering out the lines that are horizontal which are not relevant for lane detection*
- 5. Since, there are lanes on both the left side and on the right side, categorizing of lane lines to either left side or right side is done using the slope method.*
- 6. Average the lane lines to form/create a single line for each side*
- 7. A main function has been created in order to perform color masking, edge detection, mask the region of interest, draw lines in the masked region using **Hough Transformation**, filtering out the horizontal lines and averaging the lines to draw a single line and calculating the center of the line to intimate the driver if the driver moves away from the center*
- 8. Process video function to process the video by using the above functionalities*

***Sample Outputs:***



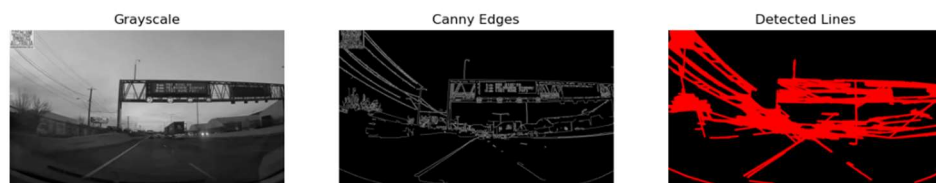
***Figure 1: Converting the image into a grayscale image and using canny edge detection to detect the edges***



***Figure 2: Applying the masking function to select only the Region of Interest***

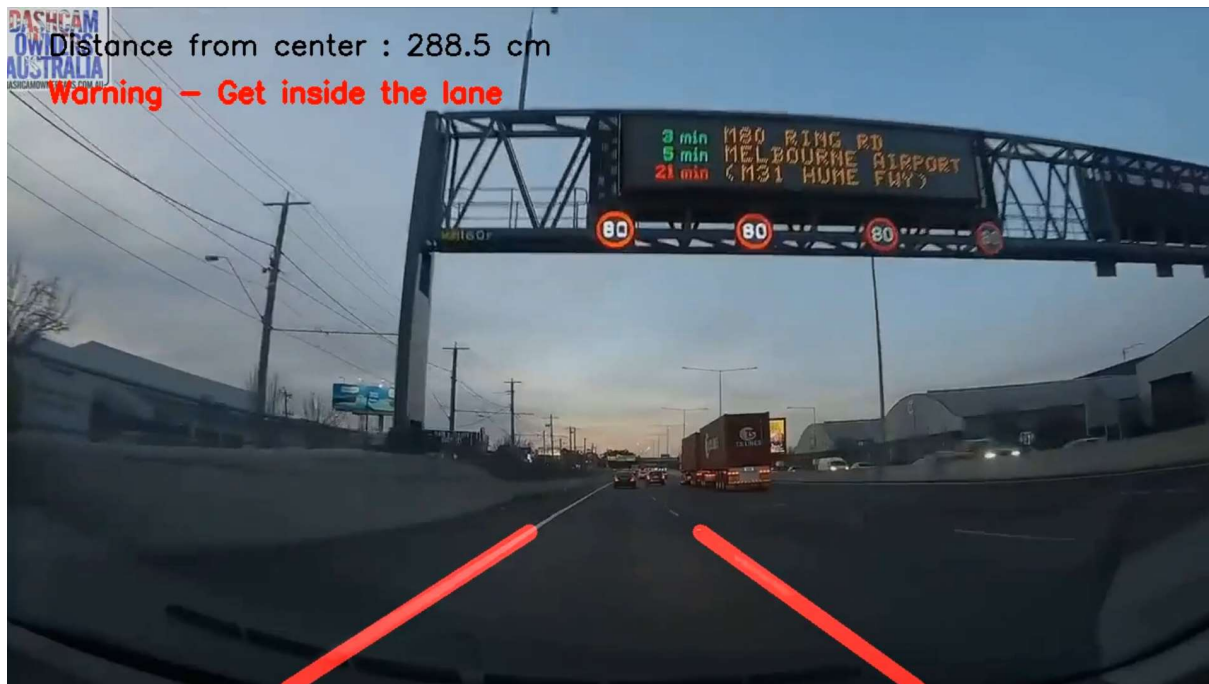


*Figure 3: Drawing lines on the image*



*Figure 4: Lines detected by applying Hough transformation*

*Sample image from output video:*



### **Conclusion:**

*Implemented Artificial Intelligence to detect the lanes and intimate the driver if the driver is crossing the lane above a minimum threshold. Implementation of this in real-time can prevent many accidents and can ensure the safety of the drivers*