

A Major Project On

# **ROAD LANE LINE DETECTION USING COMPUTER VISION**

(Submitted in partial fulfillment of the requirements for the award of Degree)

BACHELOR OF TECHNOLOGY  
In  
COMPUTER SCIENCE AND ENGINEERING  
By

M. SAI VENKAT SANJAY (187R1A05G2)

K. AKASH (187R1A05K8)

K. ABHILASH (187R1A05F8)

Under the Guidance of  
G. VIJAY KUMAR  
(Assistant Professor)



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

**CMR TECHNICAL CAMPUS**

**UGC AUTONOMOUS**

(Accredited by NAAC, NBA, Permanently Affiliated to JNTUH, Approved by AICTE, New Delhi) Recognized Under  
Section 2(f) & 12(B) of the UGC Act, 1956, Kandlakoya (V), Medchal Road, Hyderabad-501401.  
2018-2023

# ABSTRACT

In recent times many technological advancements are coming in the domain of road safety as accidents has been increasing at an alarming rate and one of the crucial reason for such accidents is lack of driver's attention. Technical advancements should be there to reduce the frequency of the accidents and stay safe. One of the way to achieve the same is through Lane Detection Systems which work with the intention to recognize the lane borders on road and further prompts the driver if he switches and moves to erroneous lane markings. Lane detecting system is an essential component of many technologically intelligent transport system. Although it's a complex goal to achieve because of vacillating road conditions that a person encounters specially while driving at night or even in daylight. Lane boundaries is detected using a camera that captures the view of the road, mounted on the front of the vehicle. The approach used in this paper changes the image taken from the video into a set of sub-images and generates image-features for each of them which are further used to detect the lanes present on the roads. There are proposed numerous ways to detect the lane markings on the road. Feature-based or model-based are the two categories of the lane detection techniques. Down-level characteristics for example lane-mark edges are used by the feature-based functions.

## **EXISTING SYSTEM:**

In the current existing system is permitted only to use in ideal road conditions such as runway. This could not be used in general roads because the edge detection used till now was Simulink Edge Detection which is implemented in MATLAB. The secondary thing is in current system Hough transform Space is only used for angle rotation and has very limited road dataset to detect the objects in single dimension of an image.

## **DISADVANTAGES:**

They only consistently work for structured roads which have noticeable markings or bord.

## **PROPOSED SYSTEM:**

In our proposed system we use Canny Edge Detection replacing the Simulink Edge Detection which is recent and efficient implementation in Python instead of MATLAB. Since, Python is the Scripting and Statistical Modelling Language it supports faster execution for mathematical functions which could be used by Canny Edge Detection technique. Secondly, we use Hough Transform Space for 3-Dimensional Object detection which could faster and accurate compared to single dimension object detection.

## **ADVANTAGES:**

- There are proposed numerous ways to detect the lane markings on the road.
- Lane detecting system is an essential component of many technologically intelligent transport system.

## **HARDWARE REQUIREMENTS:**

- Operating System: Windows, Linux.
- Processor: Minimum intel i3.
- Ram: 4 Gb.
- Hard Disk: Minimum 250 GB.

## **SOFTWARE REQUIREMENTS:**

- Python idel 3.7 version (or)
- Anaconda 3.7 (or)
- Jupiter (or)
- Google colab

## CONCLUSION:

When we drive, we use our eyes to decide where to go. The lines on the road that show us where the lanes are act as our constant reference for where to steer the vehicle. Naturally, one of the first things we would like to do in developing a self-driving vehicle is to automatically detect lane lines using an algorithm. The road detection region of interest (ROI), must be flexible. When driving up or down a steep incline, the horizon will change and no longer be a product of the proportions of the frame. This is also something to consider for tight turns and bumper to bumper traffic. This project is entirely based on image processing and road detection in self-driving vehicles in which has a great scope in future. We have completed the entire implementation using specific algorithms to detect the road clearly. If the people's thought hasn't changed about the self-driving cars being safe, these cars are already safe and are becoming safer. Only if they believe and give a try to technology, they get to enjoy the luxury of computerized driving. Driverless cars appear to be an important next step in transportation technology. They are a new all-media capsule- text to your heart's desire and it's safe. Developments in autonomous cars is continuing and the software in the car is continuing to be updated. Though it all started from a driverless thought to radio frequency, cameras, sensors, more semiautonomous features will come up, thus reducing the congestion, increasing the safety with faster reactions and fewer errors.

# **NOVELTY**

The algorithm followed in this paper is to detect lane markings on the road by giving the video of the road as an input to the system by using computer vision technology and primarily designed with the objective of reducing the frequency of accidents. System can be installed in cars and taxis in order to prevent the occurrence of accidents due to reckless driving on the roads. In school buses as it will guarantee the safety of the children. Moreover, performance of the driver can also be monitored, Road Transportation Offices can use the setup to check and report the negligence of drivers and lack of attention on the roads.

Date:14-09-2022

To,  
The PRC Incharge,  
J. Narsimha Rao,  
Associate Professor,  
CMR Technical Campus

Subject: Requesting Letter of Acceptance for the major project.

Respected sir,

We M. Sai Venkat Sanjay, K. Akash & K. Abhilash from IV Year of Computer Science and Engineering Department have explained our project idea on “**ROAD LANE LINE DETECTION USING COMPUTER VISION**” Our kind request to provide your acceptance for the major project.

Thanking you,

Guide:

G. Vijay Kumar

Yours obediently,

M. Sai Venkat Sanjay(187R1A05G2)

K. Akash(187R1A05K8)

K. Abhilash(187R1A05F8)