

**Advance Blind Turn Traffic Indicator and Accident
Prevention System**

Research Paper



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**Bachelor of Technology
(Computer Science and Information Technology)**

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ABSTRACT

According to Million Death Study (MDS), about 2.3 million people die in India per year. In that 137 thousand is because of road accidents. That is about 377 people per day. In that 3.7% because of failed to look the road. The main reason for the accident in the curve roads is because drivers are not able to see the vehicle or obstacles coming from the other end of the curve. Due to very high speed, it is difficult to control the vehicle, and the chances of falling to a cliff increase. With the inclusion of both visual (type of vehicle) and speed of the vehicle, the current situation in the corner can be showcased. The system alerts the driver before entering the corner itself on **Real-Time basis** so that driver can take precautionary steps to sail through the corner. The proposed idea of visual-based Blind turn traffic indicator and accident prevention system can greatly improve the safety of the people traveling through those roads.

Key-Words:- IOT, Deep Learning, CNN(Convolutional Neural Network), Vehicle detection, Vehicle Speed detection.

INTRODUCTION

Traditional ways to prevent accidents in blind turn are achieved by blowing the horn, using dipper and Convex Mirrors (Road Safety Mirrors) that are used to alert other drivers. Gaps in the present system are as follows:

1. Limited range of vision of convex mirrors
2. Rain or foggy weather
3. Nonfunctioning of horn/dipper
4. Least chance of hearing horn sound

The purpose of the proposed system is to reduce the number of accidents on mountain roads and blind turns. Thus, the system helps to prevent fatal accidents that are very frequent in blind corners especially at **high-risk accident-prone blind corners**.

Related Work or Literature Review

EXCEL SHEET- https://docs.google.com/spreadsheets/d/1_vhZ8tDaHNu-qtQxX52FKhkagy9U25ZN/edit?usp=sharing&oid=115023579216421937038&rtpof=true&sd=true

Motivation

There are many dangerous roads in the world like mountain roads, narrow curve roads, T roads. Some mountain roads are very narrow and they have many curves.

The problems in these curve roads is that the drivers are not able to see the vehicle or obstacles coming from another end of the curve.

Hence there is a need of many road safety systems. To avoid these problems in curve roads of mountain areas, we have proposed this vehicle accident prevention system.

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Problem Domain

It is an IOT and DL based Accident prevention system. The project's main objective is to prevent accidents on the blind turns especially in hilly areas .

Problem Definition

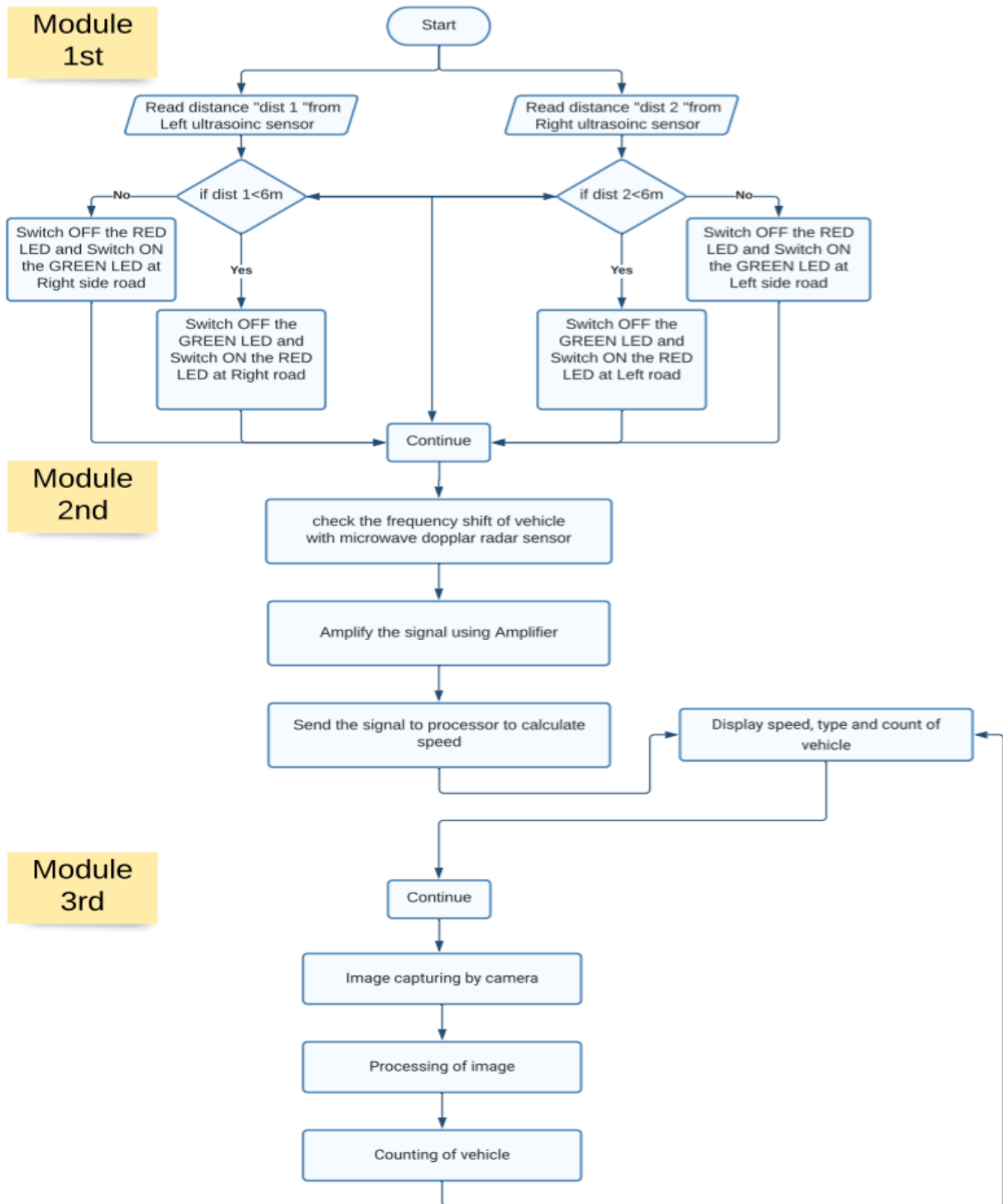
There are many accidents due to blind turns and U-turns especially in hilly areas because the drivers of one side are not aware that the vehicle is coming on the other side and at what speed and which type of vehicle, due to which it leads to accidents.

Representation or System Design

In First Module, we will alert driver by placing **Ultrasonic Sensor** on both side of the road before the curve and keeping LED lights on other side of the curve, so that if vehicle comes from one end of the curve sensor will sense the vehicle and turn OFF the **GREEN LED** and turn ON the **RED LED** at the opposite side of the road. By looking at the **Red LED** light driver can become alert and can slow down the speed of the vehicle.

In Second Module, we will check the frequency shift of vehicle with **Microwave Doppler Radar Sensor** which Send's the signal to processor to calculate speed and after calculations it will display speed of the vehicle.

In the third module, we will capture images of vehicles, and these images will be processed with the help of **Deep Learning** algorithm CNN convolutional neural networks along with VeRi datasets determine **the type of the vehicle**. In this module, we will also **count the number of vehicles** which will be displayed on screen along with the type of vehicle



Innovative Content :-

After doing Literature review, we have found that mostly on blind turns they have only red light green light signals to alert drivers but this is not an accurate solution for the problem especially in foggy or rainy season. As a result of this we are proposing a system that will detect vehicle its speed and also the type of vehicle to the drivers for better understanding of the situation in blind corners.

Future Work

As we humans can't predict the objects after our visibility range same as Self-Driven also can't predict the same so we would like to solve this problem in future. This can be done by elaborating our system and when the Self-driven cars like Tesla and waymo come under the range of our system all the information about the curve will be sent to its internal system by the help of which it will consider all circumstances and go smoothly.

Conclusion

The purpose of this project is to reduce the number of accidents at mountain roads and blind turns. Thus, the system helps to prevent head-on collision and also a fatal accident that is very frequent in blind corners. With the inclusion of both visual (type of vehicle) and speed of the vehicle, the current situation in the corner can be showcased. The system alerts the driver before entering the corner itself so that driver can take

precautionary steps in order to sail through the corner. Thus, it will be an effective solution that can be implemented in mountain and ghat roads where mirrors cannot be used effectively due to all whether conditions. This system can greatly improve the safety of the passengers traveling through those roads.

Result

In this system we have used Resnet50 CNN architecture on BIT Vehicle Dataset and we have achieve the accuracy of 72%.

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