

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

**A Minor Project Synopsis Submitted to**



**Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal**

**Towards Partial Fulfillment for the Award of**

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

**Under the Supervision of:-**

**Prof. Nisha Rathi Mam**

**Submitted By:-**

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## **Project Proposal:**

Advanced Blind turn traffic indicator and accident prevention system.

## **Project Category:**

IOT based/Machine Learning/Artificial Intelligence/Algorithm Designing based.

## **Problem Statement:**

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.

## **Scope (100 words):**

Growth in population has led to growth in technology. People use car on large number and number of accidents taking place, is increasing day-by-day. Road accidents are undoubtedly the most frequent happening cases and overall, the cause of the most damage.

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. If the vehicle is in great speed then it is difficult to control and there are chances of falling off a cliff.

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.

## **Specific Objectives:**

1. The Objective is to decrease the number of accidents in curve roads.
2. This is done by alerting the driver by means of LED light which glows when vehicle comes from the other side of the curve.
3. It will display what type of vehicle which is coming on the other hand of the road.
4. It will also display speed of vehicle which is coming on the other hand of the road.

## **Stake Hoders of Project:**

Various stakeholders such as native people from hilly area, tourist, frequent drivers, Transporters.

## **Advantages:-**

1. Avoid accidents in curve roads mountains roads and hill roads.
2. Saves thousands of lives.
3. Easily implementable to the existing roads.
- 4 .Fully automated (No person is required to operate).
5. Installation cost is very affordable while considering the effectiveness of the project.
6. Vehicle monitoring systems can be implemented with moderate efforts.

## **Background:**

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 other end of the curve. Due to very speed it is difficult to control the vehicle and chances of falling to cliff increases.

Traditional ways to prevent accidents in blind turn is achieved by blowing horn and Convex Mirrors ( Road Safety Mirrors) is preferred to alert other drivers but in the rainy and foggy seasons there is least chance of hearing horn sound and Clear lens vision.

So concluding horn and Convex Mirrors ( Road Safety Mirrors) as solution isn't right. In order to overcome these problems we are introducing sensor based automatic accident prevention system for mountain roads and Blind turns.

## **Review of Literature:**

**Aravinda B, Chaithralakshmi C, Deeksha, Ashutha K [1]** from their report, it is concluded Accident prevention in U-turn, S-turn, hilly Ghats and mountain roads using modern sensor technology, Which uses Aurdino UNO, Ultrasonic sensor, RF module LED etc.

It is the one having possibilities to reduce the accidents in U-turn, S-turn, hilly Ghats and mountain roads as the system is outside the vehicle. Moreover this technology covers all kind of vehicles New version and Old version cars.

**Kartik Venkata Mutya, Sandeep Rudra [2]** has studied that road traffic accidents are being recognized as a major public health problem in numerous countries with alarmingly increasing fatalities in developing countries. Careless driving as a result of excessive waiting and blind corners is attributed as one of the most important factor for all road accidents. An estimated 1.2 million people lose their lives in road traffic crashes every year, and another 20 to 50 million are injured. A docile, economical mechanism to prevent these road accidents is the need of the hour. It is hoped that the mechanism presented in this article would help in alleviating this concern especially in correspondence with large vehicle accidents on highways by being easily implemented in low and middle income countries.

**Ranga Sreedhar Galla [3]** has studied the basic aim of their paper is to reduce accidents on hilly and slippery roads. In curve roads the other road end of vehicle cannot seen by driver. At night time accidents may happens by intensity of head light from opposite side of vehicles. Also, the light intensity problem occurs both curved roads and mountain roads; Thousands of people lose their lives. The solution for this problem is alerting the driver about the vehicle coming from opposite side. This is done by keeping an ultrasonic sensor in one side of the road before the curve and keeping a LED light after the curve, so that if vehicle comes from one end of the curve sensor senses and LED light glows at the opposite side.

**R. Meena, R.Lavanya and K.Suresh Kumar [4]** by this paper got that Accidents are commonly occurring in hilly regions. They are caused because of curve roads and speed breakers placed in mountain roads. Many

mountain climbing roads are having tight curves. The vehicles from opposite side cannot be visible to the driver. Millions of peoples are losing their life because of the accidents. And by arising these situations an idea is proposed to avoid those types of accidents by implementing the crash sensing and warning system. It will sense the vehicle from the opposite side detect the vehicles and gives the warning alarm. Here voice command starting the condition of the tyre is used, if air pressure is decreased. Visible mirror of the vehicles observe the high intensity of opposite vehicles that will automatically reduce intensity of light in our vehicle by using dim and dip sensor.

<b>Title</b>	<b>Reference</b>	<b>Date and year of publication/release of project</b>	<b>Features</b>
Sensor Based Accident Prevention System	Aravinda B, Chaithralakshmi C, Deeksha, Ashutha K	JUNE 2016	Accident prevention in U-turn, S-turn, hilly Ghats and mountain roads using modern sensor technology.
Road Safety Mechanism to Prevent Overtaking Accidents	Kartik Venkata Mutya, Sandeep Rudra	October 2015	Road accidents, Safety, Signaling Mechanism, Driver Behaviour.
Diminishing Road Accidents On Sharp Curves	Ranga Sreedhar Galla	November 2017	The solution for this problem is alerting the driver about the vehicle coming from opposite side.  In this project ultrasonic sensor used.
Pre-Crash Sensing and Warning System in Hilly Region	R. Meena, R.Lavanya and K.Suresh Kumar	April 2017	In this Intensity sensor is used for measuring the brightness of light.  If intensity is high, system will dim the light brightness through glass.  The ultrasonic sensor is used to predict the vehicle comes in opposite side.  To control the vehicles while hill climbing pressure sensor senses the pressure of the car tyre

<u>Advanced Blind</u> <u>turn traffic indicator</u> <u>and accident</u> <u>prevention system</u>			1. The Objective is to decrease the number of accidents in curve roads. 2. This is done by alerting the driver by means of LED light which glows when vehicle comes from the other side of the curve. 3. It will display what type of vehicle which is coming on the other hand of the road. 4. It will also display speed of vehicle which is coming on the other hand of the road.
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### **Whether the Implementation and deployment of the project idea (yes/no)**

a) Has Social benefits.

YES

b) Has Environmental Benefits

NO

c) Considers health, safety, legal and cultural issues

YES

d) Considers sustainable development (economic development that is conducted without depletion of natural resources)

YES

e) Applies ethical principles while selecting project (not to steal other's project idea, code and documents)

YES

f) Commits to professional ethics and responsibilities and norms of the engineering practice.

YES

g) Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools .

YES

h) Identify, formulate, review research literature, and analyze engineering problems reaching substantiated conclusions.

YES

## **Technological know-how required for proposed project idea:**

### **Hardwares:-**

1. Arduino
2. Crystal Oscillator
3. Resistors
4. Capacitors
5. Transistors
6. Cables and Connectors
7. Diodes
8. PCB and Breadboards
9. LED
10. Transformer/Adapter
11. Push Buttons
12. Switch
13. IC
14. IC Sockets
15. Sensors

### **Software:-**

The arduino integrated development environment (IDE) is a cross-platform application (for windows, macos, linux) that is written in the programming language java. It is used to write and upload programs to arduino board.

A smart vehicle speed monitoring system is proposed using arduino and speed sensor.

And we will also use AI/ML framework for detecting which type of vehicle.

**Key Personnel and their expertise:**

Student Name and Enrollment No.	Technical Expertise
Aman Sharma (0827CT191008)	C, C++, HTML, CSS, JAVASCRIPT, JAVA
Aniket Tiwari (0827CT191010)	C++, HTML, CSS, JAVASCRIPT, JAVA
Ashwin Vyas (0827CT191012)	C, C++, JAVA, HTML
Prof. Nisha Rathi	Machine Learning, Analysis and Design of Algorithms

**Proposed Timetable:**

	Description of Work	Expected no. of weeks to complete the module
<b>Module One</b>	Exploring idea and literature review	2 week
<b>Module Two</b>	Research on technology and hardware	2 week
<b>Module Three</b>	Synopsis and presentation	1 week
<b>Module Four</b>	Learning technology	5 week
<b>Module Five</b>	First module implementation: (30% project)	8 week
<b>Module Six</b>	Second , Third module implementation and integration, testing and maintenance	20 weeks (6th semester)

## **Project Benefits:**

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 weather conditions. This system can greatly improve the safety of the passengers traveling through those roads.

## **References:**

1. International journal of innovative research in electrical, electronic and instrumentation and control engineering, Vol. 4, Issue 6, June 2016 "Sensor Based Accident Prevention System" by Aravinda, Chaithralakshmi, Deeksha, Ashutha.
  2. Jessen Joseph Leo., R. Monisha., et.al. : Vehicle movement control and accident avoidance in hilly track, IEEE Int. Conf. on Electronics and Communication Systems (ICECS).pp. 1-5(2014).
  3. Ki-Hyeon Kim., Dong-Hoon Yum., et.al. : Improving driver's visual field using estimation of curvature, IEEE Int. Conf. on Control Automation and Systems (ICCAS).pp. 728-731(2010).
  4. Duy Tran, Weihua Sheng., et.al. : A Hidden Markov Model based driver intention prediction system, IEEE Int. Conf. on Cyber Technology in Automation, Control, and Intelligent Systems (CYBER).pp. 115-120(2015).
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