ROAD SAFETY PLAN FOR HAIRPIN CURVES

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Abstract- *According to several studies, there are thousands of people failed or injured in accidents in every time. In developing countries like India, accidents are the main explanation for death. There are numerous dangerous roads at mountain places/ hill areas which are single line narrow twisted roads. At those twisted places, the motorists can't see the vehicle or obstacles coming from the other end of the wind and if the vehicle is n't in good condition, also it's delicate to control those twisted places. To minimize these accidents, we proposed a design to stop accidents at U-turns by altering the driving force about the vehicle coming from the other side. This is done by keeping an IR detector on each side of the Volte-face also that if vehicle comes from one end of the wind, also detector senses and this IR detector gives signal to Arduino and Arduino gives command to Buzzer, LED lights and Buzzer rings on the other side to warn the motorist. for safety driving in hilly area these parameters are dependable. Road safety system is the innovative conception which makes driving in hilly area accessible for motorist Accidents are more common now a days and forestalment of accidents is really a great concern of people. So, an accident forestalment system is of great help also our paper deals with a sensible road safety and forestalment system to avoid road accidents. Then detectors are used alongside Arduino and for suggestion purposes IR detectors, buzzers and RGB LED light are used. Then we're employing a counter to stay the count of vehicles passing through the road. To overcome the accidents thanks to wind and narrow roads this safety system is preventative. The main purpose of this paper is to form a security road system to gauge back the quantum of road accidents thanks to curvy and narrow roads. This suggestion system gives suggestion to the vehicles that other vehicles are coming from the contrary side in order that they will take the security measures beforehand only*

KEYWORDS: hairpin angles, road safety, sensors, Arduino microcontroller, accidents, hilly areas

1. INTRODUCTION

The mountain roads have numerous eyeless spots and turns. These spots are so dangerous occasionally that they beget accidents if not maneuverer duly. Our system is such a system which can be salutary in roads like these and can also reduce the number of accidents that do frequently.

Then we're considering hairpin angles where the driving force of a vehicle has no idea whether there is the contrary vehicle coming from the other side or not. Therefore, our system when fixed at these dangerous angles will have propinquity detectors, signals (RGB LED) and a counter, to help the motorists. The propinquity detector senses the vehicles, and thus the counter keeps the count of vehicles present therein turn, coming from a specific direction. supported the word of the counter, the signal will change its colour.

2. IMPLEMENTATION

There are multitudinous being plans towards safety against road accidents like thanks to advanced technology GSM and GPS were introduced in order that they're helpful in tracking the vehicles that met with an accident, but they aren't precautionary for avoiding the accidents.

An approach towards avoiding road accidents was proposed as Arduino grounded vehicle accident discovery system. during this proposed model Arduino, GSM, GPS, TV, vibration detectors were used.

In this system vibration detector is employed as an input source to system which is analysed by the Arduino and when the detector reading exceeds the traditional or threshold applicable action starts passing because it'll direct the GSM to shoot dispatches from the stoner mobile to the authority as they will shoot immediate help to the accident victims. Coming approach was made accidentally system using ultrasonic detector.

Ultrasonic detectors were used alongside regulator and Arduino to stop the accident from being. Buzzers and lights are placed on both the side of the roads alongside regulator and ultrasonic detectors. The ultrasonic detectors senses from where the vehicles are coming and consequently the regulators end signals and consequently buzzers will ring and thus the lights will glow to point that vehicle are coming from the contrary sides and therefore saving the vehicles from meeting with an accident.

Colourful measures were also taken by the govt to gauge back the chances of accidents on the turnings by furnishing spectacles in order that vehicles coming from the contrary sides are conscious of coming vehicles,

1. Aravinda B, Chaithralakshmi C, Deeksha, Ashutha K from their report, Accident forestalment in S- turn, hilly Ghats, Volte-face, and mountain roads using ultramodern detector technology, which uses Ultrasonic detector, Arduino UNO, RF module LED etc is concluded.

2.R.Saranya,R.Arun Kumar This paper conclude that, Accidents may take place in colourful factors drunk and driving, Texting while driving, Speeding, Distractions, sleeping while driving. Among all reason for utmost of the accidents is Doziness. While driving at the speed of 100km/ hr. the buzzer will enables if Motorist falls sleepy within 4 seconds.

3. Ranga Sreedhar Galla has studied the introductory end of their paper is to reduce accidents on hilly and slippery roads. In wind roads the contrary road end of bus cannot seen by motorist. accidents may be by intensity of head light from contrary side of vehicles at night- time. Also, the sun intensity problem occurs both twisted roads and mountain roads; Thousands of individualities lose their lives. The result for this problem is waking the driving force about the vehicle coming from contrary side. This is done by keeping a LED light after the wind and an ultrasonic detector in one side of the road before the wind, in order that if vehicle comes from one end of the wind detector senses and LED light glow sat the contrary side.

4. Kartik Venkata Mutya, Sandeep Rudra has studied that road business accidents are being honored as a significant public sickness in multitudinous countries with alarmingly adding losses in developing countries. Careless driving because of inordinate waiting and eyeless corners is attributed as one of the most important factors for all road accidents. An estimated1.2 million people lose their lives in road business crashes per annum, and another 20 to 50 million are injured. A amenable, provident medium top help these road accidents is that the need of the hour. it's hoped that the medium presented during this composition would help in easing this concern especially in correspondence with large vehicle accidents on roadways by being fluently enforced in low-and middle- income countries.

4. METHODOLOGY

The system is installed at the bends and angles. the distance of a vehicle approaching or moving down from its tasted by the propinquity detector. Grounded on its input from the propinquity detector, the counter and the signal will change their separate counts and color to indicate the motorist. Now, as an illustration, we consider that five vehicles are coming down Capitol Hill, and two vehicles are moving up. The propinquity detector at the wind while rising Capitol Hill senses that two buses are approaching towards it, as a result, the counter on the contrary side shows a count of two. On the contrary side of the wind, the contrary propinquity detector senses that five buses are coming towards it, thus the counter positioned on the contrary side, displays 5.

And the signals on both the sides have red signal, therefore the motorists can be conservative and can decelerate down and can safely man oeuvre. As the vehicles get down from the detector, the display will change and come zero and signal will come green. When there's only one auto on either of the sides, the signal is green, and the motorist gets to know that there's no vehicle on the other side.
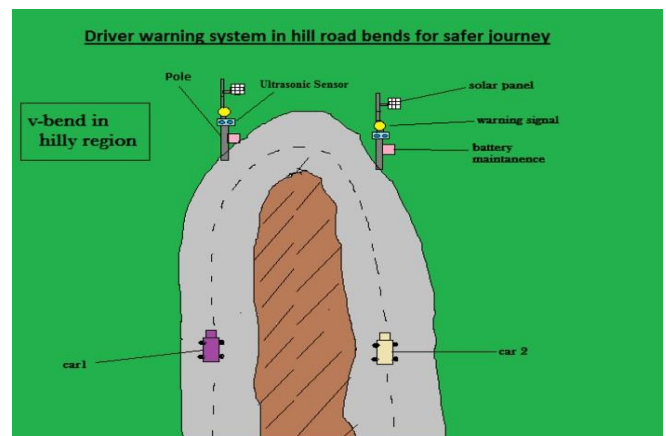

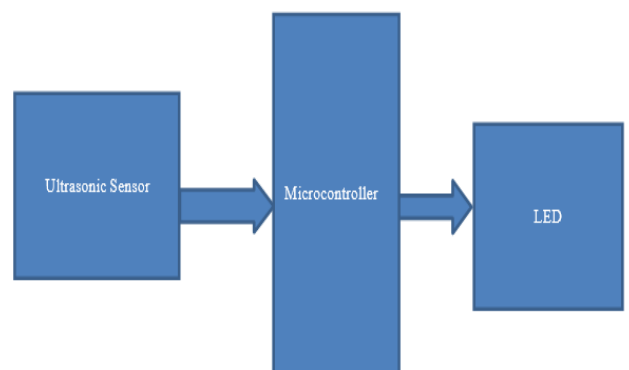
Figure 1: Driver warning system

Figure 2: Diagram of connection components

We 've used fritzing app for simulation and designing purpose of circuit

Fig 1. Shows the circuit design and fig 2. Shows the schematic illustration of working.

Fritzing is open-source software developed by university of engineering wisdom of Potsdam. Using this software we'll gain schematic illustration, circuit sketch, and PCB Design. This software might also use for writing law for colorful Arduino board.
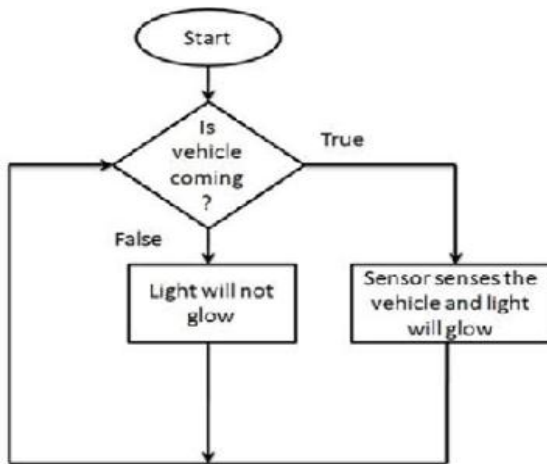

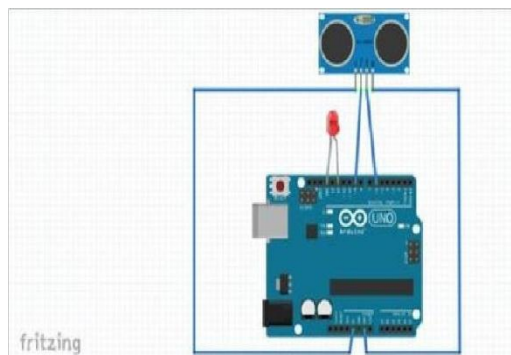**Figure 3:** Flowchart for working rule of sensor-based accident prevention system

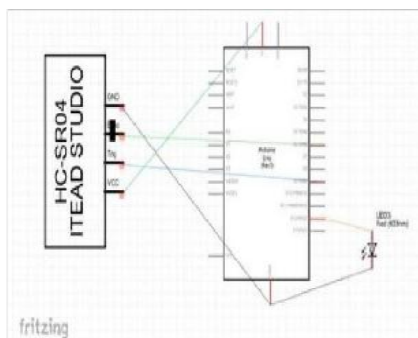**Figure 4:** Circuit Design of components Sensor base

Figure5: Demonstrative Diagram of Sensor Accident Prevention

Figure 3 shows the flowchart of software design of microcontroller which is programmed by using Arduino1.0.5 IDE tool which is open-source software. Programming is frequently done by using bedded. Operating System that we used is windows 10. As shown within the flowchart first initialize LED (12) leg to the affair the detector (9) and echo (6) pinto input. Also admit it through echo transferred by palpitation through detector.

Convert the entered value into distance. However, time detention is ready to 300 additional no conduct are taken and the process is sustained, If the gap is in range. Coming check if time detention is zero if it satisfies the condition also turnoff LED if it does not satisfy the condition also spark LED and reduce the value of time detention by

5. RESULT

By perpetration of this smart accident forestalment system, the quantum of accidents being in angles of hills have not only reduced but also there is signal furnishing information that vehicles are coming from the other side, hence waking us. This is an innovative approach where we've also used counters to count the number of vehicles progressing from the contrary side, i.e., for illustration, if three buses are coming from left side also right-lateral counter shows three and if two buses are coming from right-side also the left side counter shows two. Also, there will be red signals waking motorists to drive slow and accordingly green signals to convey communication that vehicle is coming from the contrary side.

6. CONCLUSION

This smart accident forestalment system can also be enforced using ultrasonic detectors but then we used propinquity detector to critically descry the space between the vehicles and avoid accidents. This can be installed at the junction of two or further roads indeed in plain areas, but we enforced it only just in case of hilly angles which are indeed more dangerous than normal junctions and are more prone to accidents. This design is frequently successfully enforced in future to be installed in road junctions and have an excellent future compass

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