Vehicle Accident Prevention System at Hairpin Bends

Using IR Sensors and Arduino

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***Abstract*—In the developing countries there are many dangerous roads where accidents and causes very lethal effects now a day. If we talk about dangerous roads in the world then all of them are mountain roads, T roads, narrow roads. Some mountain roads are narrow, having many curves and very tight, this cause of the most hazards. Vehicle accident prevention system can be crucial step in accident safety on hilly and mountain roads. We have recognized our past, thousands of accidents and death on mountain road, some even fall of the cliff and after that can not view even be traced. Such accidents not only destroy human life but also major loss financially to the individual and government also. To avoid such problems in curve roads mountain areas, we have proposed this vehicle accident prevention system. The main objective of this model is to diminish the accident in hairpin bends an U turnings.Sometimes it observes that the vehicle driver unable to see the vehicle reaching form opposite side due to lack of vision and the serious accidents are happened. Though this type of project ideas can help to decrease these type of problems.**

***Index Terms*—Arduino , Cables , Connector , IR Sensors , Buzzers , Power Supply , PCB Breadboards , Hairpin Bends.**

I. Problem Definition

According to million death study (MDS) about 2.3 million people die in India per year. In that 137K is because of road accidents. That about 377 peoples per day. In that 3.7% are because of unexpected obstacles.There are many risky roads and bends in the world like mountain roads, narrow curve roads and hair pin bends for ex. Kolli hill roads, Gata Loops,3-Level Zig-zag roads in Sikkim, Leh Manali Highway. The problem in the hair pin bends is that the drivers are unable to see the vehicle or obstacles coming from opposite side of the curve. If the vehicle is in high speed, then it is difficult to control the speed of the vehicle and there are chances of falling to a cliff and sometimes people not get traced. Not only accident is common thing for this type of places but also many vehicles even fall off the mountain with no trace of the vehicle as well as driver this type of accident seen many times. This cause many human life loss as well as destruction of roads. Mountain roads are generally very narrow and any accident on such roads can even cause it to close the road for many days till the road to be cleared. We have also read and hear some news about mountain road remain close for many days after some minor as well as major accident or natural calamities are happened. The vehicles involved in the accident need to remove safely. Sometimes heavy machinery need to be bring to remove the vehicle from cliffs or valleys. This is also a massive task. This is also a massive task. This cause many losses of money, time, lives of people involves in accident and peoples stuck on the roads for many hours or days. Usually convex mirrors or horns are used for this purpose, but it is not valid.

II. Literature Review

A. "Sensor Based Accident Prevention System" Author: Aravinda B, Chaithra Lakshmi C, Deeksha, Ashutha K[1]

This paper is introducing sensor based accident prevention system:- That is we are keeping ultrasonic sensor in one side of the road before the curve and keeping a LED light after the curve. Ultrasonic sensor which is also called as obstacle sensor sends signal as pulse from trigger. If vehicle is present signal will hit the vehicle and it is received by the sensor. At that time light will glow at the other side of the curve. In the absence of the vehicle the light will not glow because the signal will not be received by the sensor. As the signal senses the vehicle light will glow that is indication to driver that some vehicle is arriving from the front side. The driver get noticed the signal and slow down or stop the vehicle if necessary. This type of sensor based light system can be applicable when the driver unable to see the vehicle coming from other end of the road. Using this idea we can make all the mountain roads and curve roads safer from accidents and can save thousands of lives a year. The aim of this paper is to decrease the number of accidents in curve roads. This is done by alerting the driver by means of LED light which glows when vehicle comes from the other side of the curve. The vehicle is detected by the help of Ultrasonic sensor which is interfaced to the micro controller Arduino UNO. By this we can save thousands of lives in the curve roads.[1]

B. "Diminishing Road Accidents On Sharp Curves Using Arduino". Ranga Sreedhar Galla [2]

Has studied the main purpose of this 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 many time accidents may happens by huge intensity of head light from opposite side of vehicles. Also, the light intensity problem

occurs both curved roads and mountain roads at night because of these type of problem 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.[2]

C. "Smart Road Safety and Vehicle Accident Prevention System for Mountain Roads" Kartik Venkata Mutya, Sandeep Rudra[3]

Has studied the road traffic accidents are being recognized as a major public health problem in number of countries with alarmingly increasing fatalities in developing countries. Careless and rash 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 income countries and this mechanism can save thousands of life.[3]

D. R. Saranya, R. Arun Kumar [4]

This paper conclude that, Accidents may takes place in various factors drunk and driving, Texting while driving, Speeding, Distractions, Sleeping while driving. Among Drowsiness reason for most of the accidents. While driving at the spee of 100km/hr. driver falls sleepy within 4 seconds the buzz will enables.[4]

III. Project Plan

Before you begin to format your paper, first write and sav the content as a separate text file. Complete all content an organizational editing before formatting. Please note sectio III-A–**??** below for more information on proofreading, spellin and grammar.

Keep your text and graphic files separate until after the te has been formatted and styled. Do not number text heads– LaTeX will do that for you.

A. Abbreviations and Acronyms

Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract. Abbreviations such as IEEE, SI, MKS, CGS, ac, dc, and rms do not have to be defined. Do not use abbreviations in the title or heads unless they are unavoidable.

B. Units

- Use either SI (MKS) or CGS as primary units. (SI units are encouraged.) English units may be used as secondary units (in parentheses). An exception would be the use of English units as identifiers in trade, such as "3.5-inch disk drive".
- Avoid combining SI and CGS units, such as current in amperes and magnetic field in oersteds. This often leads to confusion because equations do not balance dimensionally. If you must use mixed units, clearly state the units for each quantity that you use in an equation.
- Do not mix complete spellings and abbreviations of units: "Wb/m^2" or "webers per square meter", not "webers/m^2". Spell out units when they appear in text: ". . . a few henries", not ". . . a few H".
- Use a zero before decimal points: "0.25", not ".25". Use "cm^3", not "cc".)

C. Figures and Tables

a) Positioning Figures and Tables: Place figures and tables at the top and bottom of columns. Avoid placing them in the middle of columns. Large figures and tables may span across both columns. Figure captions should be below the figures; table heads should appear above the tables. Insert figures and tables after they are cited in the text. Use the abbreviation "Fig. 1", even at the beginning of a sentence.

TABLE I
TABLE TYPE STYLES

Table Head	**Table Column Head**		
	Table column subhead	***Subhead***	***Subhead***
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[a]Sample of a Table footnote.

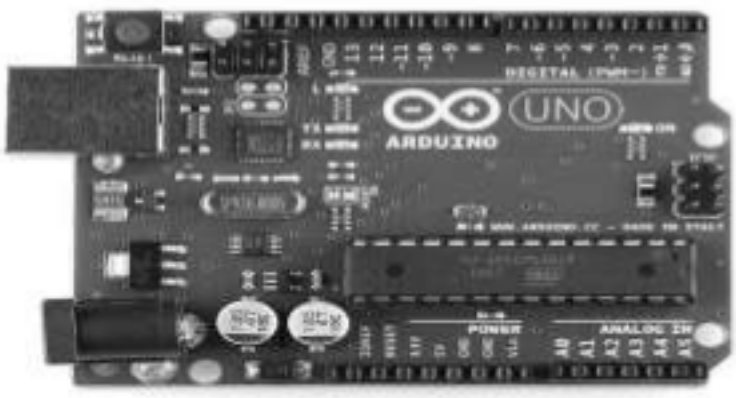

Fig. 1. Example of a figure caption.

Figure Labels: Use 8 point Times New Roman for Figure labels. Use words rather than symbols or abbreviations when writing Figure axis labels to avoid confusing the reader. As an example, write the quantity "Magnetization", or "Magnetization, M", not just "M". If including units in the label, present them within parentheses. Do not label axes only with units. In the example, write "Magnetization (A/m)" or "Magnetization {A[m(1)]}", not just "A/m". Do not label axes with a ratio of quantities and units. For example, write "Temperature (K)", not "Temperature/K".

ACKNOWLEDGMENT

The preferred spelling of the word “acknowledgment” in America is without an “e” after the “g”. Avoid the stilted expression “one of us (R. B. G.) thanks . . .”. Instead, try “R. B. G. thanks. . .”. Put sponsor acknowledgments in the unnumbered footnote on the first page.

REFERENCES

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