ISSN No:-2456-2165

Design and Fabrication of Vehicle Speed Control and Alert System Using IR Sensor

D. Loganathan, M.E.[1] , Bharathi Kannan .B[2] , Harishram.K.S[2]., Manoj.M[2], Ramesh.S[2]

[1] Assistant Professor in Mechanical Engineering at P.A. College of Engineering and Technology, Pollachi.

[2] UG Students in Mechanical Engineering at P.A. College of Engineering of Technology, Pollachi.

Abstract:- The purpose of this project is to analyze the existing state of the Indian automotive industry and its standards, and then develop a concept vehicle that can not only improve the current standard of safety and comfort in Indian automobiles. It acts as a warning in the event of an impending collision. An infrared transmitter and receiver comprise the gadget. Even if it is not receiving infrared beams from the approaching car, the device will nevertheless sound an alarm once. This is because it reflects its own infrared photons. The total system was implemented with a created work, tested working, and perfectly functional at the end of the design and testing procedure. The device operates by emitting streams of infrared light and alerting the user when an obstruction is detected within a certain range or safe distance. Our goal with this project is to create and demonstrate a cutting-edge technology that decreases the likelihood of a collision by providing early warning using sensing and in-built circuitry.

I. INTRODUCTION

Safety is an essential component of human life. Because of the number of accidents reported on major highways in developed and developing countries on a daily basis, greater focus is needed for study into the development of an effective car driving helping system. It is predicted that if such a device is built and integrated into our cars as a road safety device, it will minimize the number of accidents on our roads and various premises, resulting in less loss of life and property. Automotive radar systems can be used for a variety of purposes, including adaptive cruise control (ACC) and anti-collision devices. The issue with this brand of automobiles is that they are pricey. When you consider a developing country like India, this becomes an even greater difficulty. The Infrared Anti-Collision Device is planned to be built of relatively affordable components, making it simple to acquire and integrate. The goal of this research is to create a prototype that demonstrates how this could work. The major goal is to discover a cost-effective approach to enforce a minimum spacing for cars in traffic while still ensuring the safety of passengers in a moving car.

II. PROBLEM IDENTIFICATION

The Anti-Collision device is a detection device designed to be installed in automobiles for safety purposes. Unlike other anti-collision systems on the market today, this technology is not intended to manage the car. Instead, it functions as a warning in the event of an impending accident. The device is designed to find a cost-effective approach to implement a minimum spacing for cars in traffic. It would also ensure the safety of passengers in a moving vehicle. The device consists of an infrared transmitter and a receiver. It also has an audio-visual alarm that communicates with the receiver to efficiently inform .the driver and/or passengers. The gadget operates by emitting streams of infrared radiation, and when these rays are detected by another vehicle equipped with the device, both are supposed to take the required precautions to avoid a collision. Even if it is not detecting infrared beams from the approaching car, the device will nonetheless sound an alarm.

III. PROBLEM RECTIFICATION

The concept of employing infrared signals to build paths in communication networks between receivers and transmitters for convenience, safety, and service assurance is not new, but the application, cost, design process, and system reliability vary. Furthermore, much was covered in works by Zungeru et al. The utilization of infrared rays was explored and used to count the number of passengers in a car as well as remotely manage home appliances using short messaging services in their papers. In general, the prototype anti-collision device designed here is a detection device that is sensitive to solid objects in its path.

IV. WORKING PRINCIPLE

The systems in this overspeed control system detect and avoid accidents automatically. This mechanism is built within the car. We'd like to say a few things about how, while working on this project, we learned a lot about purchasing, designing, and fabricating models. An overspeed warning and accident prevention system is a vehicle safety device that is designed to avoid accidents caused by speeding. The technology operates by monitoring the vehicle's speed and alerting the driver when it exceeds a predetermined speed limit. We are also delighted to have finished this project

ISSN No:-2456-2165

within the time frame set. The system is based on a variety of sensors and devices, including GPS, radar, and cameras. These sensors and equipment are used to determine the vehicle's speed and position on the road. The data collected by these sensors and gadgets is then analyzed by a central computer, which evaluates whether or not the vehicle is going at a safe speed. If the car exceeds the preset speed restriction, the system may apply the brakes or reduce engine power to bring the vehicle down. This device can help minimize the likelihood of accidents and save lives by providing drivers with realtime feedback on their speed and notifying them when they exceed the speed limit. The system starts with the motor turning on.An electronic speed regulator regulates motor speed, and when speed increases, the dead weight of the centrifuge governor flies out, causing the probe to glide back. Overspeed causes the space between the slider's probe and the proximity sensor to exceed the allowable limit, causing the relay to activate.

Table 1 List of Components Used

S.no	Name of the Component	Range
1	IR sensor	15cm 10 cm
2	Battery	3.7 v 1 to 2 mah
3	Relay	2 -12v
4	Transistor	Bc547

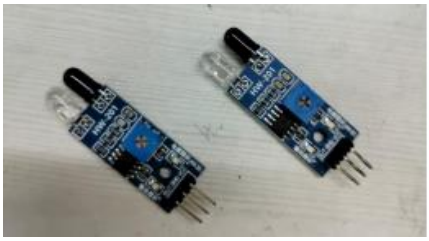

Fig 1 DESIGN IR SENSOR

Fig 2 BATTERY

Fig 3 RELAY MODULE

Fig 4 MOTOR

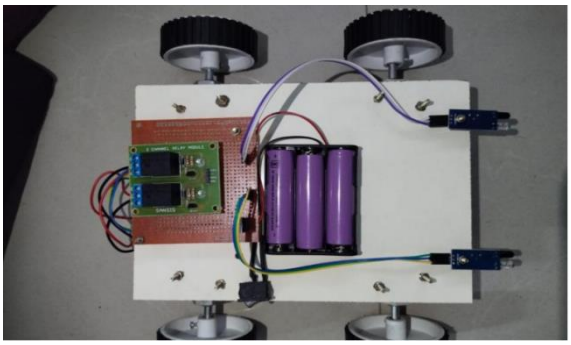

Fig 5 WORKING MODEL

V. APPLICATION

- This can help reduce the risk of accidents and improve overall road safety.
- SUVs and commercial cars medium- to heavy-duty transport vehicles.
- 3.Cargo trucks, public transport vehicles, etc.

VI. CONCLUSION

The hybrid car concept that we planned and developed is cutting-edge, and our goal is to project a wholly indigenous hybrid car concept in the Indian car market so that the entire India in general, and the economic and rural communities in India in particular, can benefit.This notion is a single-line solution to several existing socioeconomic problems such as pollution, energy scarcity, and parking shortage. The concepts presented in this car, such as wind energy device, solar energy device, active suspension device, and folding car concept, make it distinctive and state of the art in particular.The system, which is the design and construction of an anti-collision system for automobiles, was created with several things in mind, including economy, component and research material availability, efficiency, compatibility, portability, and durability. The system's performance after testing met design parameters. The system's overall operation and performance are based on the presence of two moving cars as they approach each other.

REFERENCES

[1]. Sturgis, Russell. "Construction def. B. and "Building" def. A.Sturgis' illustrated dictionary of architecture and building: an unabridged reprint of the 1901-2 edition. Mineola, N.Y.: Dover, 1989. .

[2]. Davies, Nikolas, and Erkki Jokiniemi. "Construction" def. 1-5.Dictionary of architecture and building construction. Amsterdam: Elsevier/Architectural Press, 2008. 93. Print.

[3]. "Construction" def. 1.a. 1.b. and 1.c. Oxford English Dictionary Second Edition on CD-ROM (v. 4.0) © Oxford University Press 2009
[4]. onstruction".OnlinEDictionaryhttp://www.etymonline.com/index.php?term=constructionaccessed 3/6/2014
[5]. Behrohk Khoshnevis- TEDx Feb 2012 Ojai California onYouTube Diaz, Jesus (2013- 01-31). "This Is What the First Lunar Base Could Really Look Like". Gizmodo. Retrieved 2013-02-01.
[6]. "The World's First 3D-Printed Building Will Arrive In 2014".TechCrunch. 2012-01-20. Retrieved 2013-02-08.
[7]. Charter of the New Urbanism
[8]. "Beauty, Humanism, Continuity between Past and Future". Traditional Architecture Group. Retrieved 23 March 2014.
[9]. Issue Brief: Smart-Growth: Building Livable Communities. American Institute of Architects. Retrieved on 2014-03-23.
[10]. School districts increasingly seek alternate financing : North County Times – Californian