IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 12, Issue 2, April 2024

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.379

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | Monthly Peer Reviewed & Refereed Journal |

|| Volume 12, Issue 2, April 2024 ||

International Conference on Recent Development in Engineering and Technology – ICRDET 24

Organized by

Dhaanish Ahmed Institute of Technology, KG Chavadi, Coimbatore, Tamilnadu, India

Vehicle Zone Speed Control System

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ABSTRACT: This abstract introduces a novel approach to implementing a Vehicle Zone Speed Control System (VZSCS) utilizing Radio Frequency (RF) technology. In response to the growing challenges of traffic congestion and road safety, this system leverages RF communication to dynamically regulate vehicle speeds within designated zones, enhancing safety and optimizing traffic flow.

The RF-based VZSCS employs a network of RF transceivers strategically deployed throughout road networks to establish communication links with vehicles equipped with compatible RF receivers. These transceivers continuously broadcast speed limit information and receive data from vehicles within their coverage area.

The RF-based Vehicle Zone Speed Control System represents a promising solution for addressing the complex challenges of modern transportation. By leveraging RF technology to enhance communication and control, this system has the potential to significantly improve road safety, optimize traffic flow, and pave the way for a more sustainable and efficient urban mobility ecosystem.

KEYWORDS: Radio Frequency, Transceivers, Traffic congestion

I. INTRODUCTION

In this evolved planet, where vehicle speed maintenance and control is a major problem, that leads to accidents caused due to rash driving or excessive speed., "VEHICLE ZONE SPEED CONTROL SYSTEM" project is designed to control the speed of the vehicle in different zones.

The line of focus of this project is that, this system is designed in such a way that speed is regulated and confined at the particular mapped area with the help of the RF module. These areas are mostly to be schools, colleges, educational institutes, medical institutes, hospitals, crowded markets, highways, residential areas etc. These zones have the highest human proximity, crowd, and traffic as far as the road is concerned. So there needs to be a systematic solution to ensure the utmost safety at such zones in the scope of saving several unnecessary deaths and injuries due to accidents.

This is the idea behind an area-based speed control of vehicles using RF transmitter and receiver modules. The transmitter is installed in defined areas where their speed limit of the vehicle has to be controlled. The transmitter will transmit a signal and the receiver has to be installed within the vehicle for speed controlling purposes. Whenever the vehicle enters the mapped area, the speed of the vehicle is decreased to cutoff speed and kept constant until the vehicle leaves that particular area. After that, the vehicle can be controlled by the driver based on standard traffic rules. This is how the project aims at Area based speed controlling system targeting the importance of road safety in the defined areas.

II. LITERATURE SURVEY

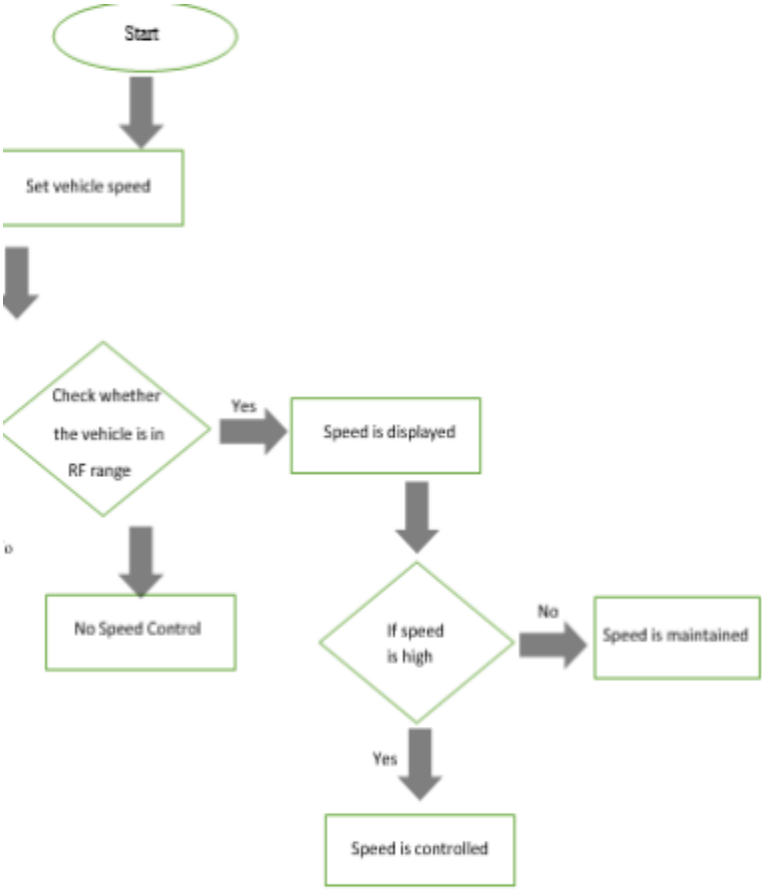
Vaishal B. Niranjane, "AUTOMATIC VEHICLE SPEED CONTROL SYSTEM IN A RESTRICTED ZONE RF BASED AUTOMATIC SPEED LIMITER FOR VEHICLES", International Journal of Scientific & Technology Research February 2020. This project has setup device as a transmitter where the multiple devices are combined to monitor the speed of the vehicle when the vehicle enters the prescribed speed and controls it by placing a receiver at the vehicles, based on the signals transmitted the speed of the vehicle gets reduced by interfacing a microcontroller. The current speed of the vehicle is sensed by the dc motor and the output of it was given to the microcontroller where it compares the speed with the prescribed limit and the speed is controlled automatically. The technology used in

thissystem to communicate between transmitter and receiver is Zigbee technology, which covers up to 10-100m within its range**.**

K. Govindaraju, S. Boopathi, F. Parvez Ahme d, S. Thulasi Ram, M.Jagadee shraja, "EMBEDDED BASEDVEHICLE SPEED CONTROL SYSTEM USING WIRELESS TECHNOLOGY", International Journal of Innovative Research In Electrical, Electronics, Instrumentation and control Engineering Vol.2, Issue 8, August 2014. Embedded Based Vehicle Speed Control System Using Wireless Technology proposed a system that has an alerting, recording and reporting feature for over-speed violation management. Zigbee transmitter is used to send the speed limit of the particular lane entered by the vehicle and it also gives alerts like road works, steep slopes, school zone in the form of acoustical messages and also in LCD. An increase in the count of violation increases the penalty amount which can be collected in toll gates located nearby.

GummarekulaSattibabu, B.V.V.Satyanarayan, VV Satyanarayana Kona, "AUTOMATIC VEHICLE SPEED WITH WIRELESS IN VEHICLE ROAD SIGN DELIVERY SYSTEM USING ARM7", International Journal of Technology Enhancements and Emerging Engineering Research, VOL 2, ISSUE 8,2020. In this paper the prototype design of a system that can deliver road signs to commuters" vehicles and can control the speed of the automobile has been demonstrated. This project is very simple which is durable and is of low cost. This project consumes less power. This system is easy to implementon present system which ensures maximum safety for drivers, passengers and pedestrians. The driver can get the information without any kind of distraction. This proto-type works even in bad weather conditions while the technology of artificial vision-based recognition of traffic signals might fail if visibility is poor and GPS Navigation.

III. FLOW CHART



IV. CONCLUSION

The project presents a solution to control the speed of the vehicle automatically using the RF signal. Here the vehicle speed is controlled automatically without the help of a driver in the defined zones. Thisstrategy is created for the most part in the intention of decreasing the demise rates that are lost amid mishaps. Hence it is concluded from the above study that the uses of Zone Based Vehicle Speed Control System minimize unwanted accidents to a great extent compared to normal behaviour. It is an easily conveyable and cost-efficient system. So, this project notifies that the idea and the review of an VehicleZone Speed Control System is a relatively more reliable option.

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INTERNATIONAL STANDARD SERIAL NUMBER INDIA

INNO SPACE SJIF Scientific Journal Impact Factor

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