



A NOVEL APPROACH TO MULTIPLE SAFETY CONTROL FOR A VEHICLE USING A ZIGBEE TECHNOLOGY

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Abstract- Automatic Vehicle Speed Control System is designed to control the speed of the automobile in precise zones to keep away from the accidents inside the low velocity areas. In this system the low pace sector is considered to be the one hundred meter earlier to the site visitors signal. The case take a look at and implementation is primarily based on the light automobile velocity control, while the vehicle is strolling with full pace and receives entered into the low speed zone the velocity of it will likely be mechanically reduced to the allowed speed in low speed zone. The microcontroller will interface with the sensors to discover the velocity of car and based totally on this input the controller will take suitable action and generate a control sign for the vehicle control system which then will prompt the mechanism of the Speed manage in the car and the speed of the vehicle is decreased to the desired pace in that zone.

Keywords: MICROCONTROLLER;ZIGBEE ; WEIGHT SENSOR ; 1X4 KEYPAD ; LCD DISPLAY ; MOTOR DRIVE;GPS APPLICATION;LDR SENSOR;RELAY.

1. INTRODUCTION

Now-a-days masses of accident appear at the signal because of growth traffic and additionally due to rash using of the drivers. As we recognize while we accelerate the vehicle the engine starts offevolved walking at better pace, and when more throttle is opened, the engine suctions sucks more quantity of load (air + gas), which burns and produces extra quantity of strength within the shape of radiations. In this gadget we've got applied the velocity limiting mechanism so that you can be effective for the discount of gasoline in the direction of the engine.This in turn has an detrimental effect on the economy of the country in addition to the lack of lives (Rajath&Nirbhay 2007). So trouble given above will become worst in the future. Traffic congestion and tidal flow control had been identified as most important troubles in contemporary urban areas, which have induced a lot thwarting for the ambulance. Moreover street accidents in the town had been incessant and to bar the lack of existence because of the injuries is even extra critical (K. Athavan 2012). Increasing the ability of the roadways is steeply-priced and, in a few areas in which land is scarce, isn't an choice. Improving the efficiency of the modern-day transportation gadget thru the implementation of advanced technologies might also alleviate traffic congestion and reduce the automobile crash-associated fatality charge.Real-time site visitors surveillance is one of the maximum critical additives of this method (MasoudHamedi 2012). Road accidents may be prevented with the aid of adopting measures which includes Traffic control, improving nice of road infrastructure automated braking systems, Camera based totally detection, RFID generation based detection are implemented. The current techniques still doesn't able to reduce the quantity of accidents. Hence there is a need to implement Intelligent Speed Adaptation (ISA) in which violation control provides green tracking, registering and reportingsystemofspeedofthevehiclewhichexceedsthe limit.The drivingbehaviour of the driver is monitored based totally on which penalty quantities are calculated. A message is sent to the remote station wherein a direct movement can taken.

2. LITERATURE SURVEY

A current survey suggests that the maximum rate of great street accidents are raised due to high uncontrollable velocity than important speed restricted in the precise area and additionally because of unaware limitations. Minimizing the quantity of rate of accidents and their worst consequences are the maximum challengeable venture for the automobile producer, site visitors authorities government and automotive studies and development businesses. The important



wishes for the motive force at the same time as using the car is attention of the restrained region in any term either audible or visible alert to insist the motive force of the vehicle approximately the obstacle in the front of the road. And this machine is to be had in cutting-edge vehicle as a special characteristic in the vehicles market, and the destiny car calls for better safety in using controls intelligently in every and each automobile. Road delivery is a primary form of shipping device used in India. India has a massive network of avenue connects throughout the nation. Our state faces the most number of accidents and accidental fatalities at the same time as comparing to other countries round the sector. The Ministry of Road Transport & Highways document discovered that India has were given one avenue twist of fate each minute in a year which lost one existence in 3 minutes. Contrary to famous notion, most effective 1.5% of the accidents are because of faulty roads. In the majority of the instances, the driver is at fault. This turns into greater dangerous in populated areas like schools or hospitals. In faculty areas, speed breakers are provided to lessen the velocity of cars, however the drivers try this manually. Many times because of motive force's fault velocity isn't always controlled. Incorporated for vehicles aiming public safety and thus leading safe society.

According to a document of NDTV, over 1, 37,000 human beings were killed in avenue accidents in 2013 on my own, that is greater than the number of people killed in all our wars prepare. The high reasons at the back of this idea are:

Increasing range of street accidents which is anticipated to be over 2 millions People violating visitors legal guidelines like.

2.2 PAPER REVIEW

Intelligent vehicle speed controller:

Amulya A M1, Karana C V2 1,2UG Students, Dept. Of Electronics and Communication Engineering, Year of Published 2018 The National Institute of Engineering, Mysore, Karnataka, India.

The machine provided here is aimed toward robotically sensing the regions / zones like "School Zone", "Work Zone" hence and tell the driving force and also assist him in controlling the car. As the design of this machine is going, the machine proposed right here includes a set of devices : Zone / Area Unit and Vehicle Unit. In conference, these unique zones or regions are indicated at the roadside on a pillar or street signal poles. As an instance, near school sector, the sign board presentations "School Zone Ahead, Drive Slowly", or "Curve Zone Area-Do no longer move speedy. "This task is evolved based totally on EMBEDDED and RF Technology.

Automatic Vehicle Speed Control System In A Restricted Zone:

Sathiskumar S, Naveen G V, Hari Prakash R, Vishnu Praveen S Year of Published 2019.

As a long way as automobiles are involved, protection could be very crucial to reduce the incidence of injuries in velocity restricted zones. It minimizes the lack of belongings and existence. According to the current surveys, within the beyond few years, an twist of fate near the school zones, medical institution zones and sharp turnings have improved exceptionally, due to their hurry to get the focused area quickly. Therefore controlling car velocity has been a important problem to be considered. This paper targets to give a sensible, compact and easy layout to expand an automated vehicle velocity control gadget, which needs to be fast get applied in college, university, sanatorium, sharp turning zones to reduce the quantity of injuries. This automated speed controlling gadget is constructed the use of the microcontroller-based platform of the Arduino Uno board.

DESIGN AND IMPLEMENTATION OF AUTOMATIC HEADLIGHT DIMMER FOR VEHICLES USING LIGHT DEPENDENT RESISTOR (LDR) SENSOR:

Okrah, S K Williams Year of Published 2019.

Headlights of automobiles pose a amazing hazard for the duration of night riding. The drivers of most cars use excessive, bright beam at the same time as using at night. This reasons a discomfort to the character traveling from the other direction and therefore reports a unexpected glare for a quick time period. This is brought on because of the high excessive headlight beam from the alternative car coming in the direction of the only from the other course. In this undertaking, an automatic headlight dimmer which uses a Light Dependent Resistor (LDR) sensor has been designed to dim the headlight of on-coming cars to keep away from human eye outcomes. This routinely switched the high beam into low beam, consequently reducing the glare effect by way of sensing the mild depth value of drawing near automobile and also eliminated the requirement of manual switching by way of the motive force which was now not carried out always. Mat lab software became hired in designing the assignment. The Keli software program become also employed to software the microcontroller.

Automatic Vehicle Speed Control With Wireless In- Vehicle Road Sign Delivery System Using ARM 7:

Gummare kula Sattibabu, V.V.Satya Narayan, VV Satya Narayana Kona Year of Published 2020.

Nowadays accidents are going on often, inflicting demise of many people by using making modest mistakes even as driving (in college sector, hills location, and highways). But every now and then it could no longer be feasible to view



the signboards placed through the Highway Department to alert the drivers in such sort of places and there may be a risk for coincidence. The advancement in the processor generation and microcontrollers has opened a brand new system designed to save you the accidents induced because of negligence of drivers in seeing traffic alerts along the road and different anomalies at the roads. So to intimate the motive force about the zones and to robotically keep the velocity is done by way RF era. The most important goal is to design a Electronic Display controller meant for vehicle's pace manage and monitors the zones, which runs on an embedded gadget and can be custom designed to suit into a car's dashboard to show records on the vehicle.

LITERATURE CONCLUSION

The above examine has a excessive impact on the layout and additives choice of the automated car pace manipulate system and inferred that Zigbee wireless conversation can be used in preference to RF communique module and RFID tag in the machine for actual-time running structures in the automobile. The technique for spotting the limited area is completed thru the Zigbee transmitter inside the quarter and the Zigbee receiver is placed on the automobile that's inferred from the review. The content material from the above-noted opinions is taken into consideration for the design and development of the automobile speed manipulate gadget routinely.

PROBLEM STATEMENT

The principal issue of the cutting-edge automobile industry is passenger protection and accidents because of drivers' negligence are one of the problems for the roadside humans. This trouble is being partly solved with using this vehicle velocity control system. Hence a device that does make certain protection is in big call for. Such a system is known as the Automatic vehicle pace manipulate system.

RESEARCH AND DEVELOPMENT

The entire gadget is being managed via a microcontroller. The predominant reason for deciding on this as a controller for their benefit of getting higher processing speeds and their potential to address a couple of inputs and outputs on the identical time without compromising the accuracy and precision of the outputs. This microcontroller which has sufficient ability to manner the enter from the Zigbee receiver. Themain cause of the processor is to manner the signal from the Zigbee transmitter which receives by way of the receiver. By using those input indicators microcontroller system these sign and actuate the respective relays and the processor accordingly generates output alerts. This unique board also can be connected to a pc for clean implementation or modification of the code that basically is the mind for the processor to govern the activities. Also, the board's capability to connect with the computer through dedicated software can be used to view an analog or graphical representation of both inputs.

PROPOSED SYSTEM:

Transmitter block diagram:

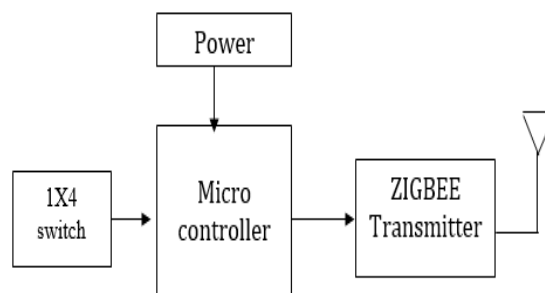
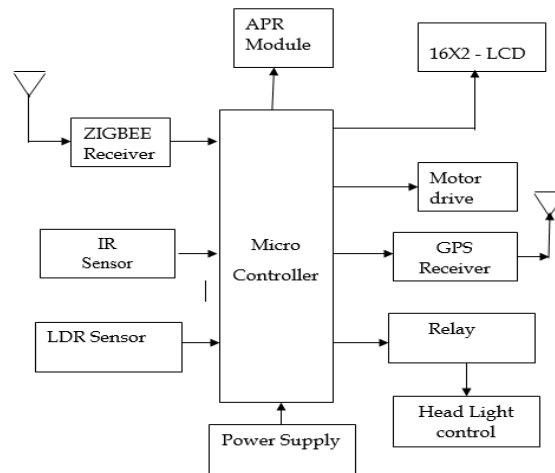


Figure 3.1 transmitter block diagram

The transmitter block consists of the power supply, Microcontroller, 1X4 switch and Zigbee transmitter.

In this block, the microcontroller was programmed with a predefined pace restrict and transmits the signal with the assist of Zigbee wi-fi conversation and 1x4 switch matrix membrane switch. This switch is used to selects the zones.

**Receiver block diagram:****Figure 3.1** receiver block diagram

In the receiver segment, it receives the speed of the automobile via velocity encoder input sign, and one-of-a-kind additives of the receiver unit are a dc motor, motor motive force, LCD display ,Zigbee receiver, microcontroller. Based on the sign received from the transmitter located in a special region the rate of the automobiles reduces routinely with the help of these gadgets. An LDR is a part that has a (variable) resistance that modifications with the mild intensity that falls upon it. This lets in them to be used in mild sensing circuits. A relay is an electrically operated transfer. It includes a set of input terminals for a single or more than one manipulate alerts, and a hard and fast of working contact terminals. The automatic headlight manage function detects brightness outdoor the vehicles.GPS is used to map vehicles.APR is audio playback recorder.

COMPONENTS OF THE SYSTEM:

- Microcontroller
- Zigbee transreceiver
- IR Sensor
- LDR Sensor
- 16x2 LCD
- Motor drive
- Relay
- Head light control
- ARP Module
- GPS
- 1X4 Switch

WORKING OF PROPOSED SYSTEM:

It may be very difficult to teach human beings about protection and safety worries may additionally it'd take lot of time or might also fail unless people agree. Where technology act a major element in safety and protection concerns in particular zones like schools, sanatorium, residential areas, etc. The zones which are marked as sensitive quarter will be attached with DATA TX/Rx both ends of the building or region. All motors could be running fitted with DATA communication hardware, as quickly as the automobile come in to the place of the region the DATA the mechanism attached within the car automatically slowdowns the automobile pace as specified in that precise place, as soon as the vehicle passes the place the manipulate once more come to driver.

When the driver technique towards the every other automobile intently an IR sensor will reveal the closeness of the two motors and controller will take a look at for the closeness and if the automobile is just too near to the every other car then the controller will reduce the velocity of our vehicle automatically and gives the alert to the motive force by way of playing an alarm inside the automobile.

Other characteristic added with this mission is that the proprietor can reveal the precise area of the truck or car for its route using GPS/GSM method. Here this venture is followed with the head light dim and dip manage for the



automobiles during the night time instances. The foremost benefit of this system is that if over dashing vehicles don't get controlled manually, after which machine gets ON and will get managed robotically and mechanically controls the headlight functioning. The LDR sensor is used to stumble on the opposite drawing near vehicles and relay is used to control the headlight dim and dip operation.

Today we are going to build an microcontroller wight machine, by interfacing Load Cell and Weight Sensor with microcontroller. We have seen weight machines at many shops, where the machine displays the weight just by placing an item on the weighing platform. So here we are building the same Weighing machine by using Arduino and Load cells, having a capacity of measuring up to some kg. This limit can be further increased by using the Load cell of higher capacity. The major issue required to build this weighing scale is a sensor which could convert weight into an equivalent electrical sign. This sensor is referred to as because the load cell, so on this challenge, we will using this as our weight sensor.

When the mild falls at the sensor the microcontroller will recall a few vehicle approach inside the opposite course and we will make the excessive beam to low beam automatically to avoid the inconvenience to the opposite riders.

PRACTICAL IMPLEMENTATION & RESULTS

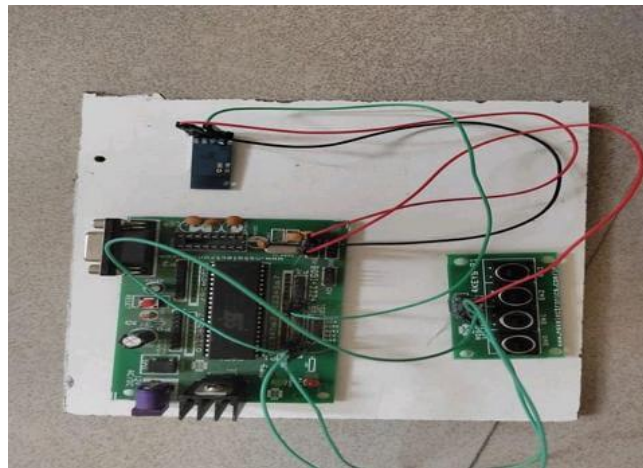


Figure 4.1 Transmitter circuit

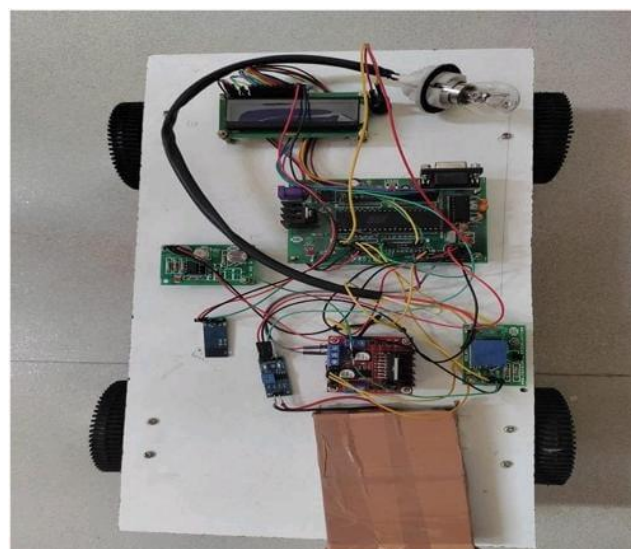


Figure 4.2 Receiver circuit

FUTURE SCOPE:

This gadget proves to be distinctly effective in minimizing the over dashing and unwanted accidents in limited zones. In modern structures, there's no self reliant speed restriction in the car to avoid accidents. Hence further research and optimizations of the automated vehicle speed manage gadget will permit us to enforce in automobiles for progressed



protection for roadside pedestrians, passengers, and different avenue customers.

CONCLUSION:

The undertaking gives an answer to manipulate the rate of the automobile routinely using the Zigbee signal. Here the automobile pace is controlled robotically without the assist of a driving force in clever zones. We hereby finish that this mission could be very smooth to put in force in an current machine. This inventive approach changed into created for the maximum element inside the goal of reducing the death prices which are misplaced amid mishaps. Hence it's miles concluded from the above examine that the uses of vehicle velocity control device in smart zones reduce unwanted accidents to a excellent volume in comparison to ordinary behavior. It is an and value-efficient system. So we notify that our idea and the evaluate of a clever area-based velocity control machine is a distinctly extra dependable choice because it overcomes the drawbacks along the opposite papers and sources.

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