



SMART SPEED BREAKER USING RFID SENSORS

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ABSTRACT

Planning and development of speed breaker in driving as well as ease for traffic police is provided. Speed breaker controller by RFID using signal controlling is a technique which is used. The design of Smart Speed Breaker is spiral torsion spring, sensors and set of gears. As vehicles move by, the sensors determine the speed and is compared with a set value. Vehicles will feel the bump else the SSB moves down due to actuation of gears hence providing smoother drive when the speed increases. The aim of this is to build a sensor system for infrastructure to vehicle communication and also to humps, which can transmit the information provided by active signals placed on the road to adapt the vehicle's speed and prevent collisions. By active signals which means ordinary traffic signals that incorporate long-range active RFID tags with information stored into them. In the real time by RFID sensors placed on the board of the vehicle the information is collected. In roads or urban streets where sudden changes of speed limit can happen due to obstacles, traffic accidents so we are presenting new infrastructure to vehicles communication and control system for speed control based on radio frequency identification technology (RFID) for identification of traffic signals on road because achieving efficient control is very difficult. This is to have automatic speed breaker on the time demand according to the requirements. Due to increased rate of accidents in our day to day life and it is necessary to have the control on vehicle near humps especially to the ambulance speed control is needed.

Keywords: Spiral torsion spring, Sensors, vehicle, RFID.

1. INTRODUCTION

The major concerns in the world is road facilities. Road humps are laid at the service road junctions. In locations where very low speeds are needed and reasonable usage of speed humps are done. Speed humps are typically placed on the residential roads. In order of comparison Humps are less aggressive than the speed bumps at low speeds and are used on the actual streets, as opposed to bumps which are primarily placed in the parking lots. Depending on the speed of the vehicle and the distance to the speed breakers on the road to any vehicle, the device indicates the driver about the hump through the embedded system feedback. When ambulance or any of the VIP vehicle arrives its prime important them to move faster so that automatically hump detects vehicle through the RF signal and hump goes flat. Even at the traffic signal, traffic signal senses such vehicles through RF signal and signal shifts to color green. sensor system for infrastructure to vehicle communication and to humps, which can transmit the information provided by the active signals placed on the road to adapt the vehicle's speed and to prevent collisions is the main aim. Sensors which have been installed in the vehicles and the humps in order to control. By active signals which means ordinary traffic signals that incorporate long-range active RFID tags with information stored in them. This information is collected in the real time by RFID sensors placed onboard of the vehicle.

2. METHODOLOGY

The speed breaker is connected to the motor by the gear system, so when signal is sent by the controller to motor driver, then the driver drives the motor according to the signal sent by the controller, so when the motor starts running, the gear connected to the speed breaker will rotate so that speed breaker will go down so by this speed breaker will become flat so that vehicle moves smoothly without any kind of disturbance. Whenever signal (radio frequency waves) is to be transmitted through the RF transmitter from the vehicles, the RF receiver receives the signal, if the RFID of both transmitter and receiver should match then only the RF receiver accepts the signal otherwise it will neglect, when the RFID of both transmitter and receiver matched then it gives signal to the controller, then the controller starts control the motor through the motor driver.

The specified RFID is given to the ambulance so that when the RFID matches then it sent the signal to the controller so controller will control the traffic signal light except the ambulance road by giving the RED signal to all the road blocking rest of the road, and it will give green signal to the one road which is near to the hospital, the near hospital road must set default so that the ambulance will go fast without any disturbance. So when needed, it comes on the road by rotating itself from flat position and when not needed, it rotates itself again and gets flat and combines with flat road. In this system, we can use the real time clock to recognize the required time for having the speed breaker on road

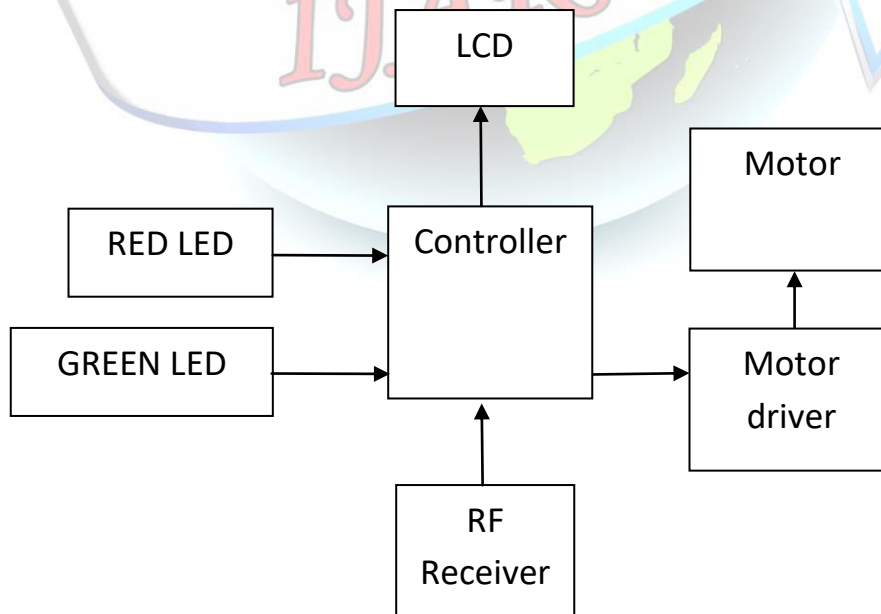


FIG: BLOCK DIAGRAM OF RECEIVER

The block diagram has microcontroller PIC ,LCD,Motor ,motor driver,RF receiver,green LED and red LED. The RF receiver receives the signal from the RF transmitter and it sends the signal to the controller ,the RF receiver receives the signal only if the code of bothRF receiver and RF transmitter matches.The controller controls the humps through motor gear system so the motor driver receives the controller signal and controls the motor.the controller displays the content on LCD display.and inturn controls the traffic signal by displaying red and green LED.the green light is displayed for the path of the ambulance and rest of the path of the road is blocked by red LED.

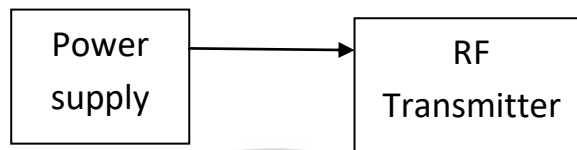


FIG: BLOCK DIAGRAM OF TRANSMITTER

The power supply is given which ranges of 5V.firstly the supply of 230V So the step down transformer steps down the voltage to 12V then the capacitor filter filters harmonics is removed by it .the regulator regulates 12V dc voltage 5v dc and supply is given to the RFtransmitter.RF transmitter transmittes the radio frequency to RF Receiver.the Rf receiver is given with unique code which has to match the code as that of Rf transmitter.the RF transmitter tansmittes the signal to the RF receiver so as to control the speed breaker.the specified RFID is given to the ambulance so when the RFID matches then it sends the signal controller so controller will control the traffic signal light by bocking all the roads except the ambulance road by giving red signal to all the road.

3. RESULT

When ambulance or any VIP vehicle arrives to move faster so that automatically hump detects vehicles through RF signal and hump goes flat which is very important. Even at the traffic signal, traffic signal senses such vehicles through the RF signal and signal shifts to green. Determining the reliability of the detection of RFID tagged traffic signals from moving vehicles at different speed and effectively evaluate the speed control adaptation to the information of the road provided by the signals for certain circumstances.

4. CONCLUSION

Smart Speed Breaker is reliable in controllingthe traffic in a very smart way thus preventing stress for the people and traffic police. It can beOptimized for the real-time application considering theactual design standards.Speed control of the vehicles to the circumstances of the road which will help to decrease the major causes of inadequate or excessive vehicle speed. The combination of sensor technologies that is RFID tagging of traffic signals to convey their to the vehicles is portable and is easily adaptable to any vehicle with minimum modifications for further conveying. It is to build a sensor system for vehicle communication and for humps, which can transmit the information provided by active signals placed on the road to adapt the EMERGENCY vehicles . By active signals which means ordinary traffic signals that incorporate long-range active RFID tags with information stored into them. This information is collected by RFID sensors placed onboard of the vehicle.



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