Controlling Of Various Vehicle Parameter Using RF Technology in Specific Zones

Mr.VipinKmuarYadav
Assistant Professor
Department of ECE
SRM University NCR Campus
Modinagar

Shreyash Singh, RaghavChawla, SankushSaini, MohitDuhan
B.Tech Student
Department of ECE
SRM University NCR Campus
Modinagar

ABSTRACT:
Our cities municipal corporations often identify special zones within the city limits, on which extra public money is spend to control the traffic behaviour. These sensitive zones have special traffic signals and sign boards located across streets. The public money being spent on this is a liability for the government in the long run because most of the daily commuters don't really pay attention to these road signs. So we have unique solution to this problem facing by the municipal corporations, we have created a wireless system which will be calibrated to operate in sensitive or special zones within city limits identified by the government.
In these special zones the traffic will be controlled by controlling parameters of individual cars. The parameters that could be controlled are speed of the vehicle like in school zone or horn of the vehicles in areas like hospital etc. . The system we proposed informs the drivers of the vehicle about the zone being entered so that the drivers could obviate and take necessary steps inside their vehicle. Our system also has an LCD display device fitted on the dashboard of the car giving necessary information to the driver of the vehicle. The wireless system we have proposed is fast and with complete control of microcontroller over vehicle motion in a specific zone increases the response time of the system. Each zone will have its unique identity which removes the possibility of irregular control of vehicle parameter leading to driver's perplexity of the situation and eventually accidents.

INTRODUCTION: -
With the advancement of technology related to wireless networks such as low power communication protocols and low power embedded software, there has been rapid investments in trials of deploying this technology in various areas such as agriculture, healthcare, home automation, games etc. . The concept of ITS (Intelligent Transport System) is also upgrading along with advancement in wireless network technology. In this project we proposed a innovative application of wireless networks called Zone wise Vehicle Parameter Control, which solves a problem of nonchalant behaviour of drivers in sensitive urban areas.

With around 1.4 million people dying in road accidents every year globally and thousands of them occurring in urban areas, there is a need of intelligent road safety management system. Accidents put a lot of pressure on government economically and socially in community because of loss of precious human lives, most of which occur due to nonchalance behaviour of the driver, this needs to be addressed. So with the help of embedded and wireless technology we have come across an idea which addresses this issue in urban area.

In urban areas the municipal corporations of the city already have sensitive locations within city limits in records and to ensure that these areas remain foolproof safe we have created a project in which each area will have its own transmitting module broadcasting information about specific zone/area up to few meters all around. In this technology each vehicle in the city will be installed with a receiver which will be standardized in order to reduce cost and maintenance. The receiver which is common to all the vehicles in the city will receive information once entered in a specific zone, the vehicle with the help of an LCD will inform the driver

about that zone approaching then the driver may voluntarily change its vehicle parameters or will be forced to do so. The unique ID or address in each zone which will be broadcasted will be decoded by vehicle's receiver and according to that a specific parameter will be controlled, like if it is a school zone the vehicle's speed will be controlled or if is a hospital zone the vehicle's horn may be disabled or its intensity will be decreased. Likewise this system can be configured to numerous zone and many sensitive situations.

This report gives the overview of all the components being used along with their specifications and working. The report is also extended to include the detail internal working of overall circuit of the prototype system along with the programming involved with the microcontroller which is the sole controller of the vehicle parameters.

OPERATION:-

The transmitter zone uses high power RF modules to regularly broadcast the data containing the unique ID of the zone either it be school zone or the hospital zone. The vehicle upon entering any of the zone will automatically detect the RF signals being broadcasted and subsequently changes parameter automatically based on the data bits being sent.

Transmitting zone consist of Voltage Regulator of supply +5V and an Encoder HT12E and a Transmitting antenna. The Receiver system inside the vehicle consist of Receiving antenna, Voltage Regulator, Decoder HT12D, Microcontroller, Relays, LCD, Transistors, Resistors and Voltage Oscillator.

A car which has entered the zone contains the RF receiver which will detect the encoded data being transmitted from the transmitter zone. The receiver is connected to decoder which will convert the serial data into parallel data. The decoder will then feed this parallel data bits to the microcontroller. The microcontroller has been implemented with a help of a code, which has been programmed in it with a help of a programmer.
LCD installed in the car shows the school zone has been entered. The relay is activated by the microcontroller to control the speed of the car. As soon as the car exits the School Zone, corresponding data stream is received by car and LCD now shows that the school zone has been exited. The relay is de-energized and the car now retains its original speed. Similarly in hospital zone the car's buzzer is being controlled.

COMPONENTS USED:-
1. Voltage Regulator.
2. Microcontroller.
3. Encoder & Decoder.
4. Relays.
5. LCD.
6. LED.
7. Resistors.
8. Capacitors.
9. Transistors.

CIRCUIT DIAGRAM:-
BLOCK DIAGRAM OF INFO PROVIDER SYSTEM
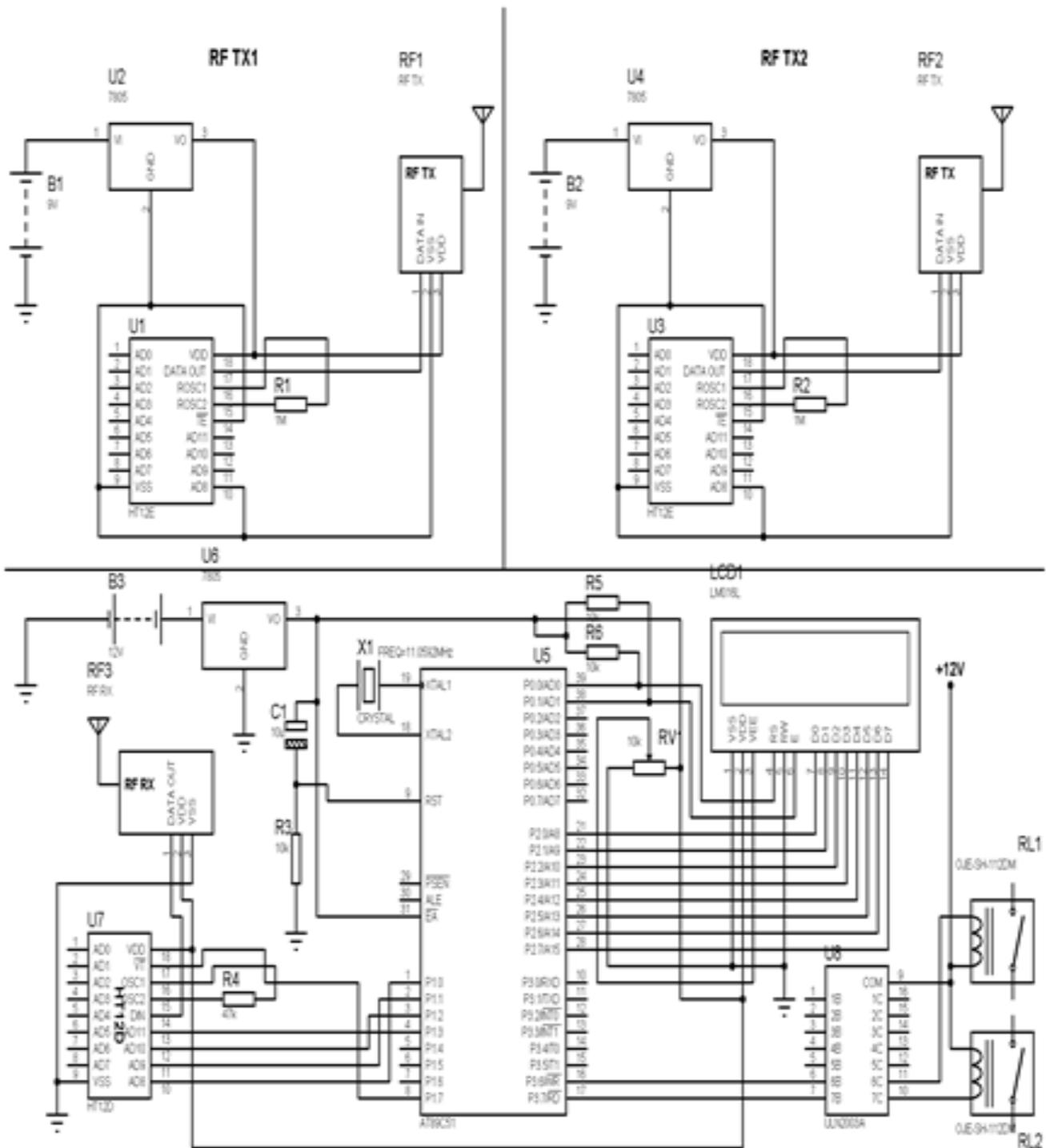
II.CONCLUSION:-

The system we designed for an urban environment successfully reduces the possibility of accidents and enforcing the rules specified for those zones forcibly and without any pitfalls. This kind of system could be implemented in designing new cities or while converting a conventional city into a smart city. This system could be modified for automatic steep inclination detection on roads as well many other situations.

When the world is craving for safer urban environment and smart cities, these kinds of systems paves the way for people to realize those dreams sooner. With around 100,000 people every year dying due to road accidents in urban areas, this system could be a revolutionary method of reducing those numbers to near zero..

REFERENCES:-

1. Seong-eunYoo, Poh Kit Chong and Daeyoung Kim, " School Zone Safety System Based on Wireless Sensor Network", MDPI Open journal Access Platform, Published: 28 July 2009
2. T.U. Anand Santhosh Kumar, J. Mrudula, "Advanced Accident Avoidance System for Automobiles", International Journal of Computer Trends and Technology (IJCTT) – volume 6 number 2– Dec 2013
3. Understanding Relays by Kevin R. Sullivan Professor of Automotive Technology, Skyline College.
4. Epcglobalinc., EPC radio-frequency identity protocols class-1 generation-2 UHF RFID protocol for communications at 860 MHz –960 MHz, version 1.0.9. Online, September 2005.