SMART VEHICLE MANAGEMENT

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Abstact— **Smart vehicle Traffic management measures are aimed at improving the safety and flow of traffic utilizing traffic capacity more effectively. Smart vehicle provides Traffic Incident Detection. Smart Traffic Monitoring can integrate with traffic management and smart roadway systems and hosts a feature rich product scope itself. There are so many traffic rules for reliable life which we break intentionally or unintentionally. Some of them can results to critical. Our System is mainly based upon the same thing. Our idea is to let it know for vehicles about such zones (School/Hospital/Police) to avoid accident in school area, to keep quite in hospital area. The main objective is to design a Smart Display controller meant for vehicle's speed control and monitors the zones, which can run on an embedded system. Smart Display & Control (SDC) can be custom designed to fit into a vehicle's dashboard, and displays information on the vehicle. The project is composed of two separate units: zone status transmitter unit and receiver (speed display and control) unit. [5]Once the information is received from the zones, the vehicle's embedded unit automatically alerts the driver, to reduce the speed according to the zone, it waits for few seconds, and otherwise vehicle's SDC unit automatically reduces the speed.**

Index Terms— **RF, Microcontroller, embedded system.**

I. INTRODUCTION

In India following the traffic rule is most convenient method of controlling traffic in today's fast life. Due to of busy life, some people do not follow the traffic rule intentionally or unintentionally, for example blowing the horn in hospital zone, over speed of a vehicle in school area and breaking traffic rules. In many region RTO have placed hoardings of respective regions. But still very few people follow these rules. Our System mainly based upon the same thing. Our idea is to let it know for vehicles about such zones (School/Hospital/Police).


Our system consists of Microcontroller to which other peripheral interface LCD (16X2) is to display zone. Motors to represent vehicle and RF Wireless module. A system comparing of microcontroller, RF module is placed in particular zone when vehicle will enter in that zone then respective zone name will be displayed on LCD.

The RF module is placed in every zone which covers 30meters area is capable of transmitting and receiving appropriate data which is control by backbone software algorithm in microcontroller. The system is capable communicating with the microcontroller which is install on the vehicle.

II. FUNCTIONAL BLOCK DIAGRAM

BLOCK DIAGRAMS:
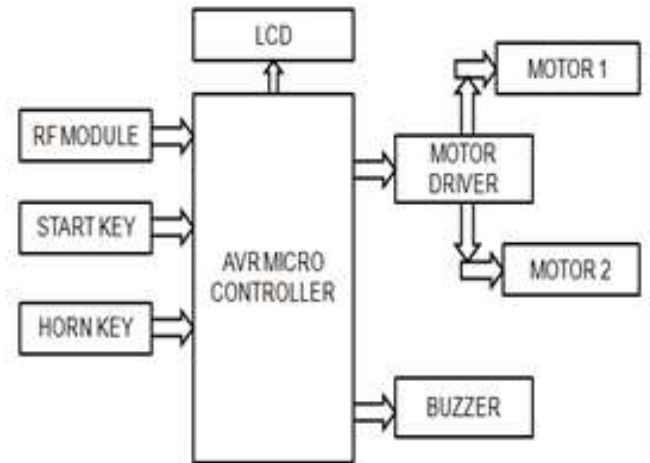
Block Diagram of Vehicle Node

This is a very good project for commercial use. The latest technology RF module is used to communicate between a vehicle and zone nodes. When the vehicle comes in that zone, the signal in that RF module is given to the microcontroller, according to that signal. The microcontroller will take the right action,
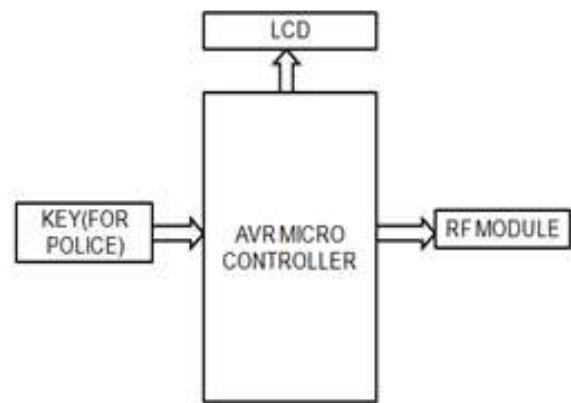
Hospital/School Nodes

For example. Microcontroller will receive the signal, if vehicle is in the hospital zone then buzzer will get disable.

If vehicle is in school zone then there will be restriction on speed as given by RTO, and if anyone tries to break the RTO rules then the police will be able to control that vehicle as they are having a universal key, on which police can control any vehicle. As shown in Fig. RF Module used to communicate with vehicle wirelessly. RF will broadcast some character continuously, to indicate which zone it is.

III. CIRCUIT DIAGRAM
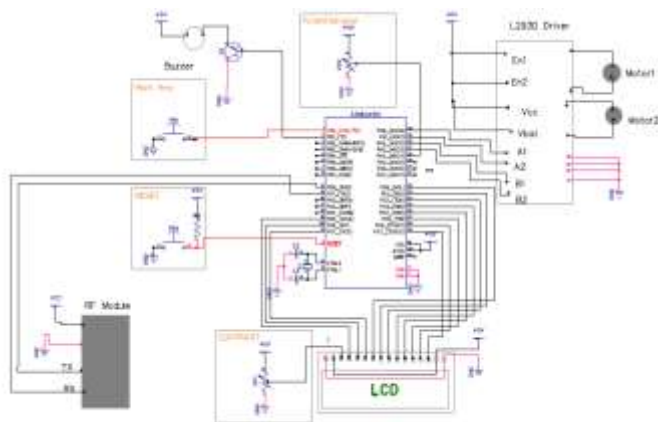
For vehicle node:

Microcontroller at heart of system. This circuit is mounted on a vehicle having dc motors to represent as vehicle wheels.

Microcontroller is used to control two dc motors through dc motor driver. Also the potentiometer is used to represent speed controller of dc motors.
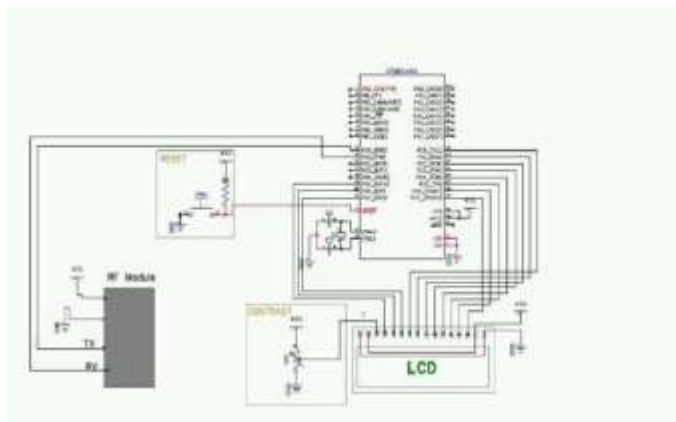
One of the Microcontroller port is dedicated to LCD display assembly. Where a variable resistor is for contrast adjustment.LCD display used is 16X2 alphanumeric Display. Main source of information to vehicle node gets through RF module connected at transmitter and receiver pins of microcontrollers.

As controller having built in power on reset, we just apply manual reset of it. For reset circuitry we have to give an active low input via ground.

Horn key and buzzer assembly is used to reprise blowing horn mechanism of vehicle. When we press horn key then according to zone, where the vehicle is present now the controller will give permission to blow horn. To drive the dc buzzer he we are using PNP transistor.

As output of controller is insufficient to drive dc motors so we have to use a dc motor driver IC. Output of controller is around 5v, 40 mA. And requirement of dc motor around 130 mA. As per requirement to represent vehicle we are to use dc motors of 30 rpm control signals through Microcontroller are for rotation of dc motor.

In this way the entire assembly represents the vehicle node of system.

For school and hospital nodes:

This is what the school or hospital node of our project, having controller as heart of system. This circuit is mounted in an area having certain need of traffic rules like don't blow horn in hospital zone and speed limit in school area.

One of the microcontrollers is dedicated to LCD display assembly. Where a variable resistor is for contrast adjustment.LCD display used is 16X2 alphanumeric Display. Main transmitter of information to send zone information to vehicle node gets through RF module connected at transmitter and receiver pins of microcontroller. The area node continuously transmits about zone information. According to zone requirements horn of vehicle is disabled in hospital area or a limit is put on speed in school area.

As microcontroller having built in power on reset, we just apply manual reset. For reset circuitry we have to give an active low input via ground. In this way the entire assembly represents the school and hospital node of system.

Only difference between police zone node and remaining two zones is the key for police .by using this key traffic police or the authority responsible for traffic rules and regulation will be able to stop vehicle that had brokered the rules.

IV. ADVANTAGES

1. Reduction in accident risks.
2. Reduction of noise in hospital area.
3. Reducing speed limits near institutions such as school.
4. Reduction in Traffic jams (as the rules will be followed).
5. Easy to compute figure a vehicle particularly which is breaking a rule.

V. LIMITATIONS

1. We cannot consider that area where hospital and school are same place
2. Range of the RF module is limited.

VI. FUTURE WORK

1. We will make compulsion to each and every vehicle.
2. We will take separate frequency band to avoid interference.
3. If bulk production, we can do lower cost of this module.
4. In future, we can add cameras outside school that will display on our vehicle LCD screen.
5. We can add key in our home and in our vehicle so that if our car has failed it will directly come to know our family members.

VII. PROPOSED RESULT

The proposed result for this topic is to prepare a model which will show the experimental view of this project covering the theoretical as well as practical areas related to this project this model will also show the practical implementation of the device which could be fitted in to the automobiles for safety purposes. We are trying to work with the all-pros and cons related to this project. Hopefully we could come with a model which will show the experimental view of Smart Vehicle and control different nodes through which the idea of automated speed control, horn

control and traffic controlled by RTO police to prevent the accident and control traffic would be more clearly understood.

VIII. CONCLUSION

- This project development Work is for traffic and transport related problems such as special zone alert using the latest RFID technology and traffic rules violation control.
- In this project we have designed a system to give complete solution. It is proposed as a low cost optimized solution using RFID.
- This is in line with the developed countries like USA, England, German and Japan where RFID, ZIGBEE, GPS and GSM technologies are widely used for traffic management.
- But in India no one has implemented any automated system for transport management due to prohibitive cost.

IX. ACKNOWLEDGEMENTS

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