

# Vehicle monitoring System

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**Abstract** Accidents are very common nowadays. there are several reasons behind it, some of them are over speed drowsiness etc...The design of vehicle monitoring system builds a new monitoring system based on embedded processing technology and MATLAB programming. This helps to reduce accidents. The project contains two sections, an embedded section and MATLAB section. In embedded section PIC microcontroller is using and several modules are connected to it. The highlight of the section is a black box which collects the information from the vibration sensor, RPM sensor, left/right indicator and stores it in EPROM memory. MATLAB section consists of a camera in front of the driver and this camera continuously monitors the eye blinking and if there any fault occurs it switch on the buzzer and this will help to reduce accidents through drowsiness

**Keywords**— MATLAB(Matrix Laboratory), RPM Sensor, EPROM Memory.

## 1. Introduction

Microcontroller as a core, the new vehicle monitoring system integrated a lot of hardware modules black box such as camera vibration sensor, ultra sound distance meter etc...The design of vehicle monitoring system [1] builds a new monitoring system based on embedded processing technology and MATLAB Programming. This project contains two sections

- 1 Embedded section
- 2 MATLAB section

Fig 1: Block Diagram

In the embedded section PIC Microcontroller is using and several modules are connected to this microcontroller. They are PIR Sensor, vibration sensor, ultra sound distance meter, Left/Right turn switch, Door lock switch, RPM Sensor, Engine ON/OFF Switch, LCD display. Here when the engine is on system checks the PIR sensor is on, when it is on alive detected and switch on the buzzer and it also consist of a ultrasound distance meter, which continuously monitors the speed of the vehicle and when it crosses a particular limit the vehicle become automatically switch on.

This embedded section also contains a black box which collects the information's from the vibration sensor, RPM Sensor, Left/Right indicator and stores it in the EPROM memory. When there is any accident happen this data will help for the further enquiries.

In the MATLAB Section it consist of a camera in front of the driver and this camera continuously monitors the eyeball movement and if there is any fault occurs then it switch on the buzzer and this will help to reduce accidents through drowsiness.

## 2. Experimental Description

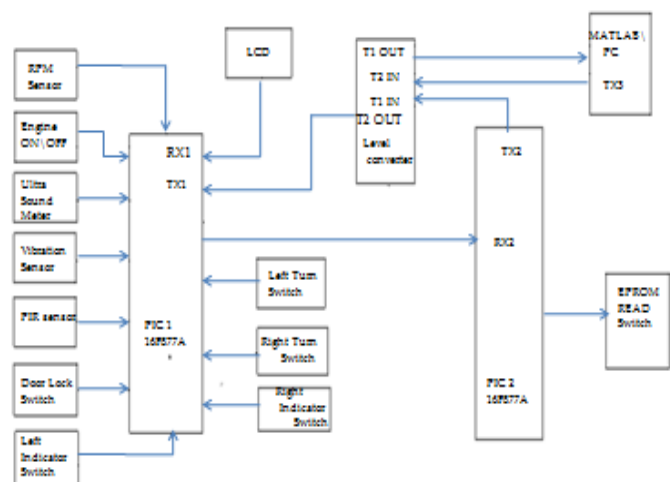
### 2.1 Project Description

The proposed system is to design and construct a vehicle monitoring system for reducing the accidents. This is accomplished by using a Embedded section and a MATLAB Section. Here the embedded section controls different parameters of the vehicle. The set up will provide a black box section, which stores the data's from the vibration sensor, RPM Sensor, Left/Right Indicator Switch and it stores in the memory. Through this system, not only design a system to reduce accidents, but also it helps for the enquiries related with a accident by using the information from this blackbox. The design is done with PIC16F877A. In the MATLAB Section detecting the drowsiness by using a camera, which is placed in front of the driver. The camera continuously, monitors the eye blinking and when the eye is not blinked upto a limit, then the buzzer will be on. This helps to reduce accidents through drowsiness.

## 3. Block Diagram

### 3.1 Block Diagram Description

The block diagram consist of two PIC Microcontrollers. To the first microcontroller, connecting several sensor



modules like RPM Sensor, Engine ON/OFF Switch, Ultra sound distance meter, Vibration sensor, PIR sensor, Door lock switch, Left/Right indicator Switch. If the engine is off and door is locked then if any one is trapped in the vehicle ,alive detected and then buzzer will be on and alive detection is displayed on the screen.

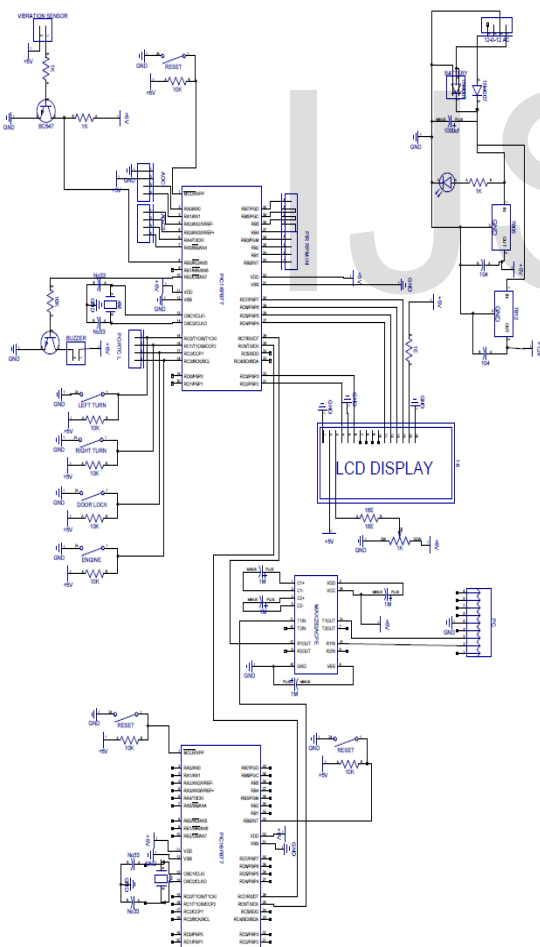
If the speed of a vehicle is greater than a speed limit and the distance between the vehicles are small then the buzzer will become on.

The second microcontroller is for black box purpose, that it stores the information's from the RPM sensor, Left/Right indicator and it stores it in a EPROM memory.

A RS232 level shifter is used between the PC and the PIC Microcontroller.

Here in the PC we are doing the drowsiness detection ,which is based on MATLAB programming.

### 3.2 Circuit Diagram



### 3.3 Circuit Diagram Description

The basic circuit of the microcontroller consist of a power supply unit, External Crystal oscillator and a reset

circuitry . The power supply consist of a voltage regulator which is used to regulate the voltage to a fixed voltage of 5v .Normally 7805 voltage regulators are used for this purpose.

### 4 . Flow Chart

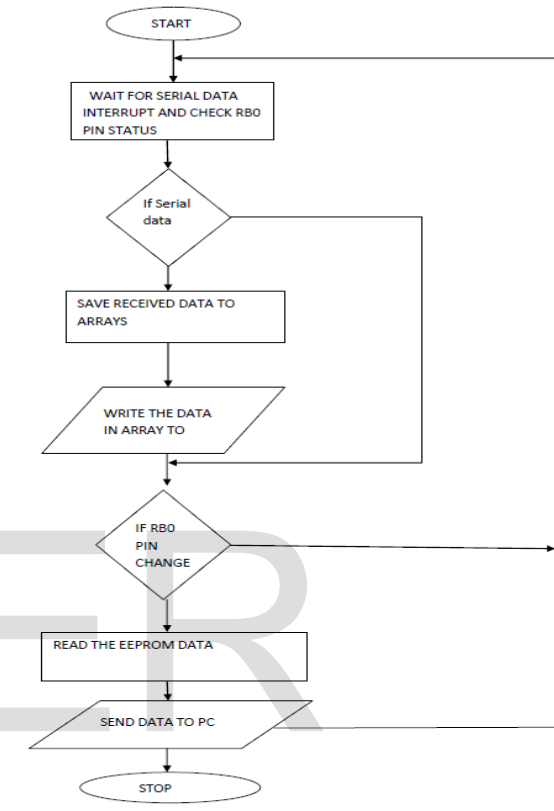


Figure 1: Flow Chart of Blackbox

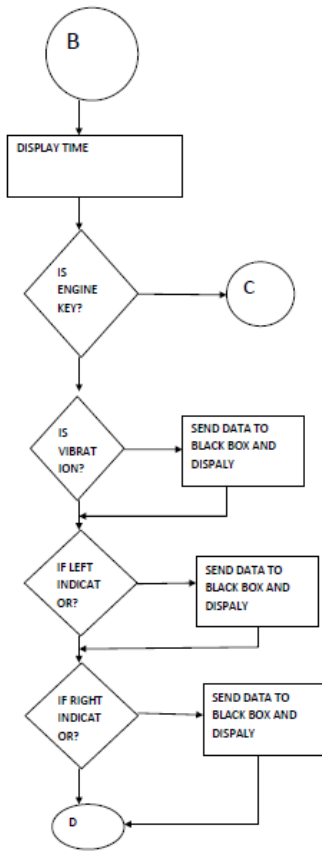


Figure 2 : Flow Chart of Main board

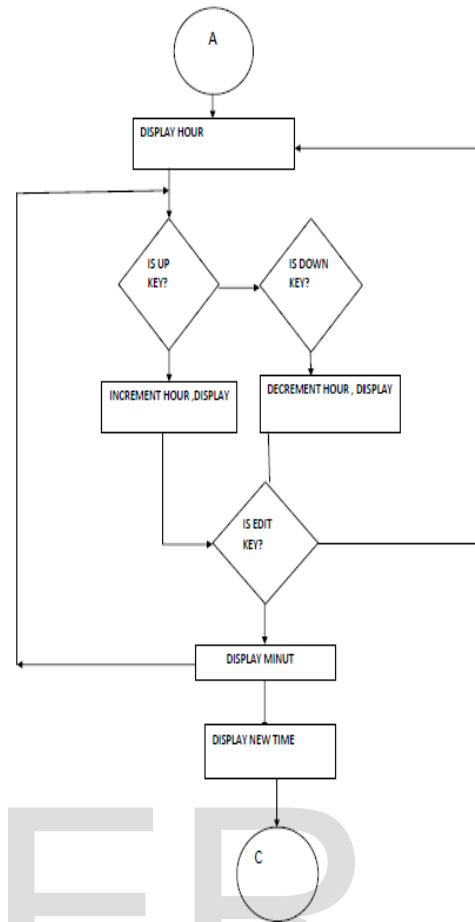


Figure 4 : Flow Chart of Main board

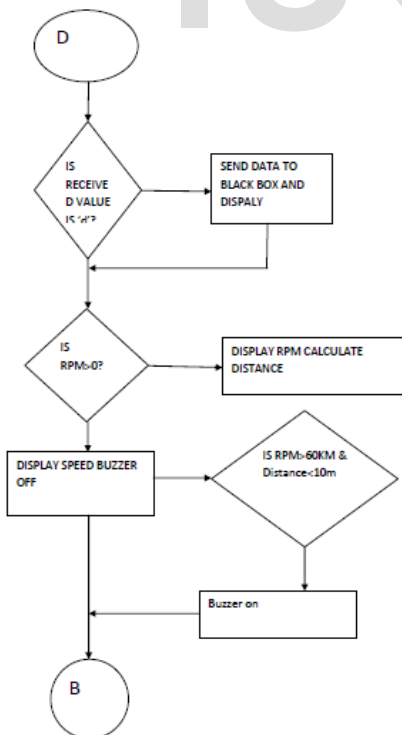


Figure 3 : Flow Chart of Main board

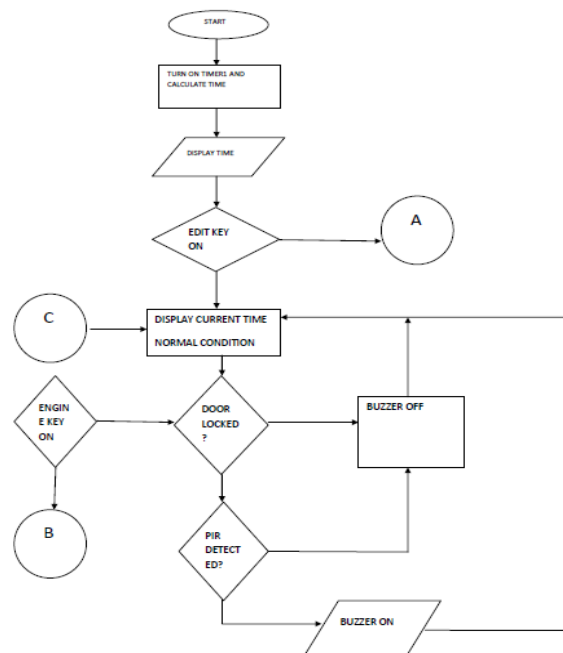


Figure 5 : Flow Chart of Main board

## 5. Stimulation

We had used MATLAB as the programming software and it is multi paradigm numerical computing environment and fourth generation programming language.

## 6. Conclusions

The concerned project gives the detailed view on the vehicle monitoring system and drowsiness detection. It helps to reduce accidents by using low cost circuits. The device formulated here will help a lot to reduce accidents and also for the further enquiries about an accident. The project ensures an overall remedy for accidents. The device consists of two sections, an embedded section and an MATLAB Section. The device will be portable with low cost system so that the common man can make use of it.

## 7. Acknowledgment

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## 8. References

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