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"Car black box with Collision detection system"

[1] Shraddha Pawar, [2] Pooja Pawar, [3] Pooja Dhavale, [4] L.M.Sagale
[1][2][3][4] Department of Electronics and Telecommunication Engineering, Shri Chhatrapati Shivajiraje College of Engineering, Bhor, Pune, (M. S.), India

Abstract: **- This paper presents an step to the concept of car black-box . Developing an electronic system for enhancing the driving experience . Making car driving rules and regulation friendly . Paper gives solution to increase in accidents problem . It continuously observers car status (different parameters) , detecting the accident emigiatly and gives location of accident . so that assistance of accident can be done.**

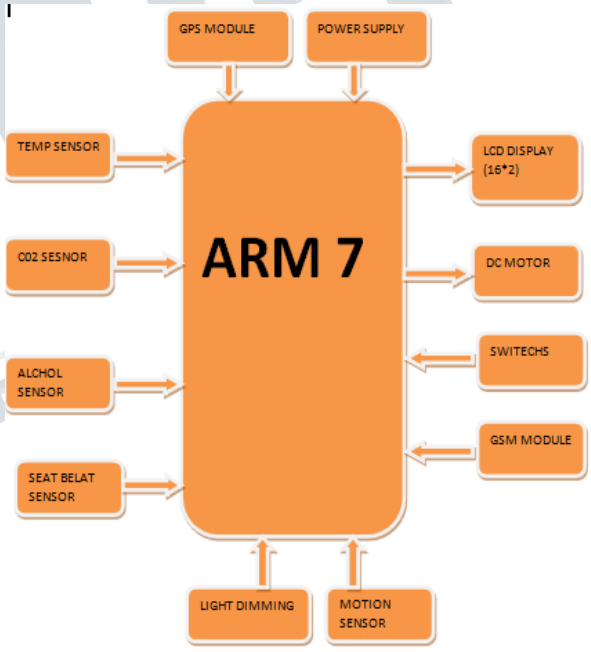
Keywords: **- GSM, GPS, black box, accident, ARM, vehicle.**

I. INTRODUCTION

In India the major source of death is accident. because of the speed driving , drunk driving, engine get burst due to temperature , late assistance to accident causes number of death and disabilities. this is a major problem. Car black box is designed to reduce the accident and late assistance problem. Car black box includes alcohol sensor, co2 sensor, temperature sensor, motion sensor, GPS, GSM module. In our project alcohol sensor is used for alcohol detection. When driver enters into the vehicle then alcohol sensor first check the alcohol status. If the driver is drunk then engine cannot be start .If the driver is not drunk then engine get start. it causes this system restrict the drunk person to drive the car .co2 sensor is used for co2 detection. If the co2 content of engine get increases then there may be chances of damage of engine. so when co2 increase above the threshold level then by giving the indication car get stopped. To protect the vehicle from thief motion sensor is used. If the vehicle get stolen it is hard to find out it. So because of GPS and motion sensor it becomes easy to find out. If the accident occurs then the location of accident by using GPS, status of vehicle when accident occure like alcohol, co2, temp. Status etc. are send to the police station, ambulance and family member.

II. MATERIAL AND METHODS

System blocks diagram and working:



Working:

1. TEMPERATURE SENSOR:

The LM35 is a temperature sensor. LM35 output voltage is linearly proportional to the Celsius (Centigrade) temperature. The LM35 is operate at −55˚ to +150℃ temperature range. In the project 5v voltage and 0.45mA current given to the LM35. Temperature sensor used for detecting the temperature of vehicle. temperature sensor is connected to pin no.15 of ARM processor.

2. ALCOHOL SENSOR: MQ-3 is a alcohol sensor. Used for alcohol detection. It is high sensitive to alcohol. If driver has drunk, then alcohol sensor sends signal to microcontroller. The output of MQ-3 is given to pin

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LPC2148 and message is displayed on LCD. MQ-3 is a six pin IC. Mq-3 is connected to the PINSEL0 of pin number 14 of ARM.

3. CO2 SENSOR: MQ-7 is a CO2 sensor. MQ-7 gas sensor is used for CO2 detection. It is high sensitive to carbon monoxide, simple drive circuit, stable and long life. If the level of CO2 when smoke emitted from car is more than the desired level, MQ-7 gas sensor sends signal to microcontroller. The output of MQ-7 is given to pin P0.30 of LPC2138 and message is displayed on LCD, and after some time car get stop to avoid the damage to the engine.

4. MOTION SENSOR: SB612A is a hydroelectric sensor module which developed for human body detection. An PIR sensor combined with a Fresnel lens which is mounted on a compact PCB, and limited components to form the module. Delay time, flux is adjustable. Customization is accepted. this sensor detect the human body. The range of motion sensor is 5 meter. Sensor detect the human body within 5m distance. motion sensor is connected to pin no. 21

5. LDR SENSOR: LDR stands for light dependent resistor. The light sensor is a passive devices.LDR convert light signal into the electrical output. Light sensors are known as "Photo Sensors" because the conversion of light energy into electricity . In project LDR is used for light dimming. Used to adjust the intensity of light.

6. GSM MODULE: GSM stand for Global System for Mobile communications. It is open, digital cellular technology used for transmitting mobile voice and data services. It operates at either the 900 MHz or 1,800 MHz frequency band. In the project GSM is used for sending the status of vehicle and location of accident when accident is occurs.

7. GPS: GPS abbreviates global positioning system and this is used to detect the latitude and longitude of the particular position and it also shows the exact time. It detects these values anywhere on the earth. In our project it plays main role and it is the main source of the latitude and longitude of the vehicle to know the accident occurred location, or even for theft tracking of the vehicle.GPS is connected to the pinsel 0 of pin no. p0.21 as a receiving pin.

8. LPC2138:

Specifications of LPC 2138:

- Operating Frequency is DC 60 MHz.
- Program memory (Bytes) – 32768.
- Program memory (instruction) – 16384.
- 10-bit Analog Digital Module – 13 i/p Channels.
- Serial Communication – 2 UART.
- Instruction set is75 instruction; 83 with extended instruction set enabled.
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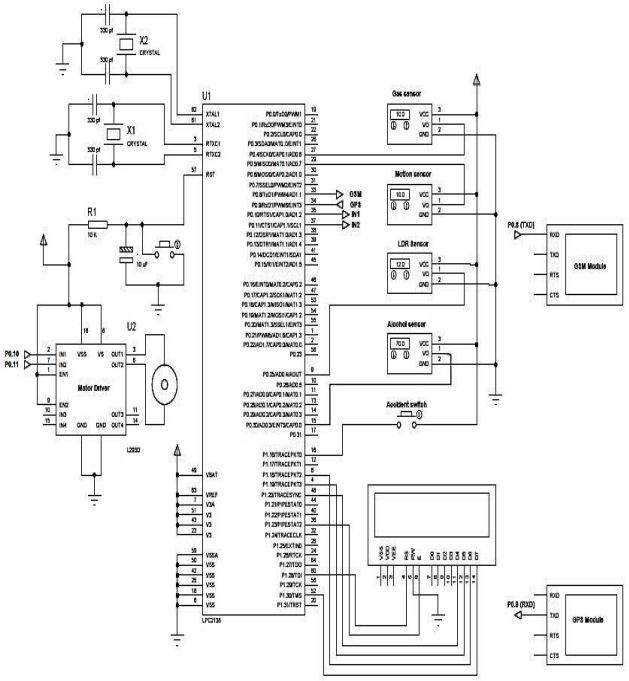
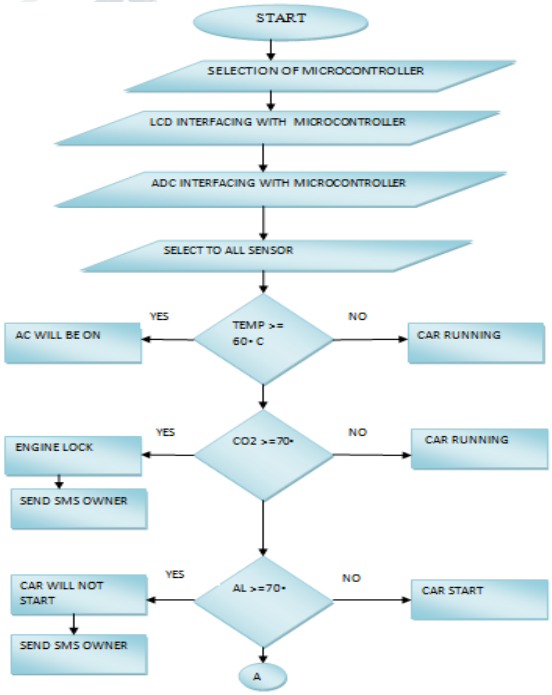
III. CIRCUIT DIAGRAM



IV. FLOW CHART



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V. CONCLUSION

Car black box give an intelligent solution to the problem .An electronics system development to reduce accident rate . various sensors gives continues status of car . with this parameters taking smart action to status of the vehicle .this parameters are continuously observed with system . and connected to user or owner of vehicle with GPS and GSM tracking systems . this system has advantage of smart action with electronic system and accuracy . Accuracy in assistance as GPS used for tracking. Small size and rigidity is another advantage to system . it has future scope as development in automobile is major concern in today's life .

VI. FUTURE SCOPE

This system can be implemented in vehicle with adapting video and audio recording in system

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