Health Welfare Monitoring System in Car

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Abstract— As per survey 2 lacks accident causes due to health issues of driver also in many situations the family members or the ambulance and police authority is not informed in time. This result in delaying the help reached to the person suffered due to health consciousness. The purpose of the project is to find the vehicle where it is and locate the vehicle by means of sending a message using a system which is placed inside of vehicle system Most of the times we may not be able to find accident location because we don't know where accident will happen. To avoid this we are going to implement system which will sense health parameters like pulse, blood pressure, temperature of driver. This system uses ATmega328 controller temperature sensor ultrasonic and IR sensor blood pressure and pulse sensor GSM-GPS module etc. According to sensor inputs if it exceeds certain range fed to the controller when any health issue occurs GSM module sends the message or call to authorized person and ambulance and car shifts to automatic driving mode for some period and at appropriate place car will stop by detecting object and indicating alarm simultaneously.

Keywords: Pulse Sensor, Blood Pressure Sensor, Temperature Sensor, NRF Module, GSM Module

I. INTRODUCTION

We know that now a days we hear about many accidental cases. There are different causes of accident. but as per a survey of accidental cases we came to know that most of the accident takes place just because of health related issues of driver .There are different types of health issues such as sudden changes in blood pressure, increase in body temperature, pulse rate change etc.to avoid such a kind of accident cases we proposed these solution in which we are using sensors which sense the different accident heath parameter .and we are programming in such a way that, if any health parameter changes beyond specified normal range then it will gives indication and further process will start to avoid.

II. LITERATURE REVIEW

Referring different research papers and books we get knowledge of latest technology and implementation design. Table-1 shows list of these researches that we have referred.

Sr. No	Researcher /Author	Topic
1	Namrata H. Rane, Snehal D.Thakare	Real time vehicle accident detection and tracking using GPS and GSM
2.	Shivam S. Shinde , Aditi V.Lawate	Intelligent Automobile Accident Avoidance System
3.	C.K.Das, M.V.Alam,	A Wireless heartbeat and temperature monitoring system
	M.I.Hoque	for remote patients

Table 1:

III. EXISTING SYSTEM

BMW and University of Miami's William Lehman Injury research center have co-operative project. In these project if car crashes then it sends data of crashed car to that hospital thus hospital provides quick and appropriate help to that car.

IV. PROPOSED SYSTEM

Transmitter section: This part consist of following components

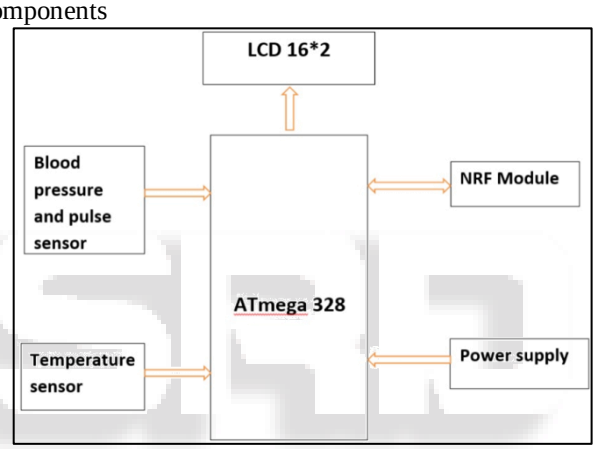

Fig. 1:

A. ATmega 328

This is brain of a system which use to control sensors, modules used in system. The features of ATmega328 as follows:

- The high-performance Microchip 8-bit AVR RISC-based microcontroller
- 32KB ISP flash memory with read-while-write capabilities, 1KB EEPROM, 2KB SRAM, 23 general purpose I/O lines,
- 32 general purpose working registers, three flexible timer/counters with compare modes, internal and external interrupts, serial programmable USART,
- a byte-oriented 2-wire serial interface, SPI serial port, 6-channel 10-bit A/D converter (8-channels in TQFP and QFN/MLF packages),
- Programmable watchdog timer with internal oscillator, and five software selectable power saving modes.
- The device operates between 1.8-5.5 volts

B. Blood Pressure & Pulse Rate Sensor

Blood Pressure & Pulse reading are shown on display with serial out for external projects of embedded circuit processing and display. Shows Systolic, Diastolic and Pulse Readings. Compact design fits over your wrist like a watch. Easy to use wrist style eliminates pumping.

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C. Features

- Intelligent automatic compression and decompression
- Easy to operate, switching button to start measuring
- 60 store group's memory measurements
- Can read single or all measures
- 3 minutes automatic power saving device
- Intelligent device debugging, automatic power to detect
- Local tests for wrist circumference as 135-195mm
- Large-scale digital liquid crystal display screen, Easy to Read Display
- Fully Automatic, Clinical Accuracy, High-accuracy
- Power by External +5V DC
- Serial output data for external circuit processing or display.

D. Temperature Sensor

(LM35) these sensor is used to measure body temperature of driver whose output fed to the controller, whose output voltage is linearly proportional to the temperature. The LM35 does not require any external calibration or trimming to provide typical accuracies of ±1⁄4°C .At room temperature and ±3⁄4°C over a full −55 to +150°Ctemperature range.

E. NRF Module

These can provide wireless data transmission between transmitter and receiver.The LM35 does not require any external calibration or trimming to provide typical accuracies of ±1⁄4°Cat room temperature and ±3⁄4°C over a full −55 to +150°Ctemperature range.

F. LCD display

It is used to display temperature, blood pressure of driver and pulse rate.

1) Receiver Section

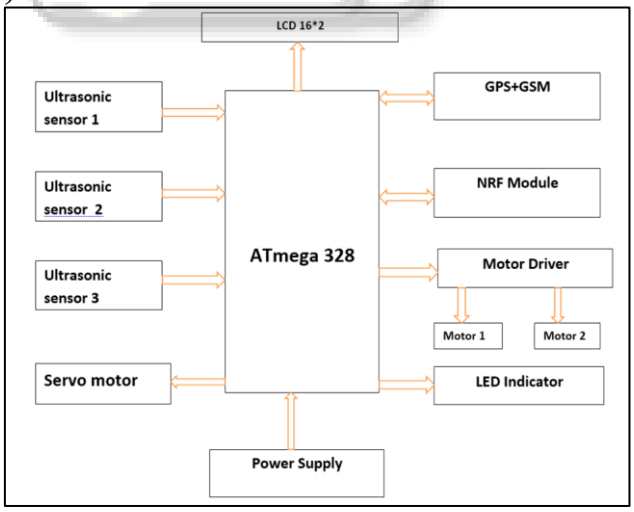

Fig. 2:

1) Ultrasonic Sensor

These are used for detection of object which is controlled by ATmega 328.Ultrasonic ranging module HC - SR04 provides 2cm - 400cm non-contact measurement function, the ranging accuracy can reach to 3mm. The modules includes ultrasonic transmitters, receiver and control circuit. The basic principle of work:

- Using I/O trigger for at least 10us high level signal,
- The Module automatically sends eight 40 kHz and detect whether there is a pulse signal back.
- IF the signal back, through high level, time of high output I/O duration is the time from sending ultrasonic to returning.
- Test distance =
- (High level time× velocity of sound (340M/S) / 2

2) 2. NRF module used to receive data from transmitter section.
3) 3. Motor driver is controlled by controller and two servo motors are controlled by using motor driver.
4) 4. LED indication are used while any health issue is detected
5) 5. GPS and GSM module are used for position tracking of vehicle and to send information about this to respective person.

V. WORKING

When any health problem will occur to driver's health then ultrasonic sensor and GSM module will be active. The blood pressure, temperature and pulse rate will sense by the three sensor described in block diagram. When any range of Blood pressure, temperature and pulse rate exceeded then ultrasonic sensor start sensing the nearby objects or vehicles to the car , at the same time GSM module will send the call to the ambulance and the number fed to GSM module. As per the object detected by the ultrasonic sensor the car will shift to the left and at an appropriate location it will stop.

VI. TERMINOLOGY

Medical terms related to blood pressure:

Classification of blood pressure	Systolic (mm Hg)	Diastolic (mm Hg)
Hypotension	< 90	< 60
Desired	90-119	60-79
Prehypertension	120-139	80-90
Hypertensive Crisis	=180	=110

Table 2:

VII. TESTING RESULT

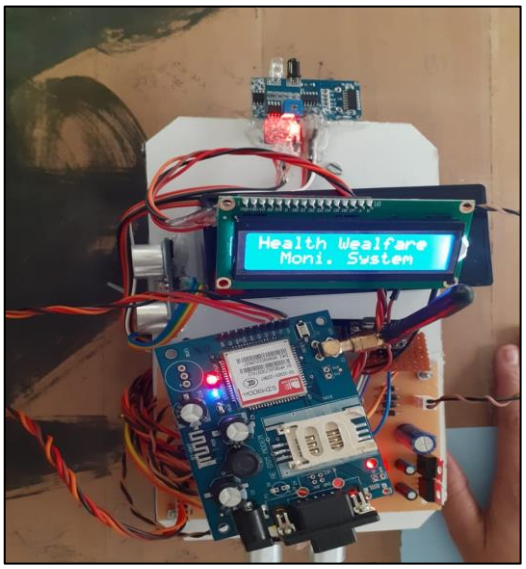

Fig. 3:

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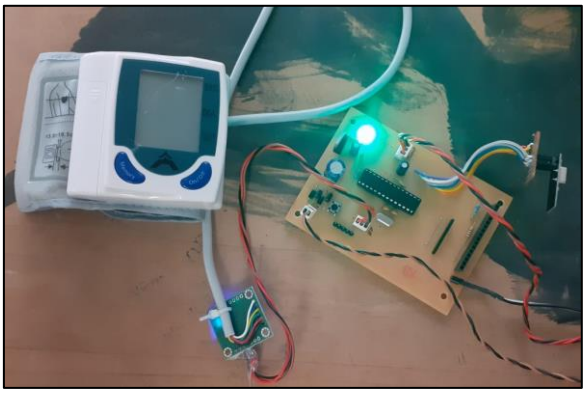

Fig. 4:

VIII. CONCLUSION

As we know accident cases are increasing day by day due to various health issues like hypertension, hypotension, Heart attack, and fever. It is necessary to avoid accident rather than to detect it for safety and saving one's life. This system can reduce the possibilities of accidents and it will be effective to implement and safe module for prevention from accident causes due to health issue as it include health monitoring sensors. The receiver assembly will use the ultrasonic and IR sensors so the whole system work according to algorithm i.e. it will either stop or will go in the left lane and stop. So the vehicles moving in fast lane can easily move ahead without causing traffic problems and also preventing crashes.

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