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Automated Intimation to Ambulance for Emergency Medical Service in Smart Cities

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ABSTRACT: The rapid growth of technology and infrastructure has made our lives easier. The advent of technology has also increased the traffic hazards and the road accidents take place frequently which cause huge loss of life and property because of the poor emergency facilities. Our project will provide an optimum solution to this drawback. According to this project when a vehicle meets with an accident immediately the vibrational sensor will detect the signal and send it to microcontroller. Accident spot will be tracking through the GPS and the alert messages including geographic allocation coordinates through the GSM module to ambulance unit. After confirming the location of accident spot the ambulance unit will start its rescue operation. Additionally an alcoholic sensor can be used to control and stop the engine when the person is an alcoholic level.

KEYWORDS: Arduino, vibrational sensor, alcohol sensor, temperature sensor, microcontroller, GSM

I. INTRODUCTION

In India there is one death every 4 minutes due to road accidents. The total number of road accidents increased by 2.5 percent 7,01,423 in 2018. The major reason behind these accidents is carelessness and fault of the driver and it has been revealed as a single most responsible factor for road accidents, killings, and injuries on all roads in the country over a long period. In India 433 people die every day due to road accident which is four times more than the annual death toll from terrorism. In recent times, helmets have been made compulsory. Traffic accidents in India increase every year. According to section 129 of motor vehicles act, 1998 makes it compulsory for every single riding two-wheeler to wear a helmet following to the standard of the BIS (Bureau of Indian Standards). In India, a drunken driver case is a criminal offence. As a drunken driver is a potential murderer, he cannot perform his task without risk and endanger road safety. 70 percent of road accidents in India are due to drunken driving. Hence road safety becomes a major issue of concern. Therefore it is necessary to implement such a technique which is not easy to bypass the basic rule of wearing a helmet and to avoid drunken driving.

In this work, a system is designed which checks for alcohol and helmet before the engine of the bike is turned on. Helmet use consistently has been shown to reduce motor cycle crash related injuries and death. An alcohol sensor is used as a breath analyser which is used to continuously monitor the rider's breath and check if it is below the permissible level. MQ-3 sensor is used for this purpose. The engine of the two-wheeler is controlled by using Arduino.

II. ALCOHOL SENSOR

The MQ-3 gas sensor is suitable for detecting alcohol content from the breath. The sensitivity of the sensor is high and it also has a faster response time. Hence the sensor can be placed just below the face shield and above the face protection. The surface of the sensor can detect various concentrations of alcohol. It detects the alcohol from the rider's breath; the resistance value drop leads to a change in voltage. (Temperature variation occurs), the sensor provides an analog resistive output based on the alcohol concentration. The sensor output will be given to the microcontroller through an interfacing circuit. The microcontroller receives the data from the sensor, the inbuilt analog-to-digital converter in the Arduino will convert the analog output to the corresponding digital data. The converted digital value can be viewed using an LCD.

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display. Generally, the illegal consumption of alcohol during driving is 0.08mg/L as per the government act.

1. TEMPERATURE SENSOR

A temperature sensor is a device, usually an RTD (resistance temperature detector) or a thermocouple, that collects the data about temperature from a source and converts the data into understandable form for a device or an observer. LM35 is an integrated analog temperature sensor whose electrical output is proportional to Degree Centigrade. LM35 Sensor doesnot require any external calibration or trimming to provide typical accuracies.

2. VIBRATION SENSOR

The vibration sensor is also called as a piezoelectric sensor. This sensor uses the piezoelectric effects while measuring the changes within acceleration, pressure, temperature, force otherwise strain by changing to an electrical charge. The sensitivity of the sensor can be selected based on the application. In a standard application (50g range), the sensitivity of a typical vibration sensor is 100mV/G

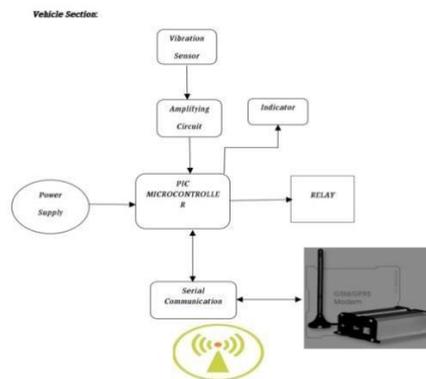


Fig 1 Block Diagram :LIQUID CRYSTAL DISPLAY

A liquid crystal display is a thin flat panel that can let or block the light through it. Each block in the panel can be in any shape and is filled with liquid crystals that can be made clear or solid, by changing the electric current to that block. Liquid crystal uses a backlight or a reflector to produce images in color or monochrome instead of emitting light directly. The accelero meter value alcohol concentration values and the status about helmet are displayed in the LCD for convenience.

6. MICROCONTROLLER

In this paper, Arduino ATMEGA-328 microcontroller is used. Arduino ATMEGA-328 microcontroller consists of 14 input/output and analog/digital pins (out of these, 6 pins are considered to be PWM pins), 6 analog inputs and remaining digital inputs. Arduino is an open-source microcontroller. The arduino boards are programmed through RS232 serial interface connections with ATMEGA-328P Arduino microcontroller. The input voltage recommended for Arduino microcontroller from 7V and the maximum of 12V ATMEGA-328. Integrated Chip, which acts as a processor for the Arduino board nearly consists of 28 pins. It also consists of pulse width modulation (PWM).



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III. METHODOLOGY

Accident Intimation To Ambulance For Emergency Medical Services In Smart Cities are stimulated using PROTEUS SOFTWARE. If a vehicle has met with an accident, vibrational sensor gives the electrical signal to micro controller. GPS provides latitude and longitude information about vehicle to control section through GSM. Control section transmits the control signal to all the signals in between ambulance and vehicle by the RF transmission technique.

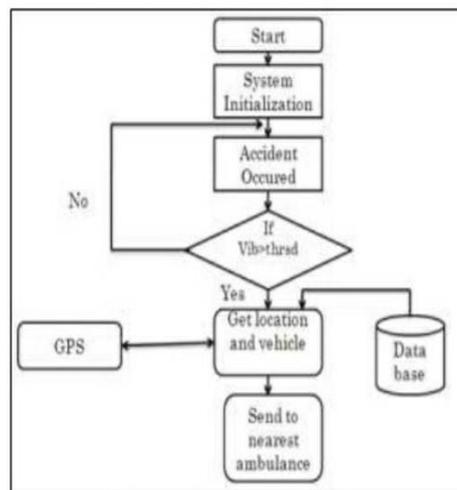


fig 2 flow chart

IV. ACKNOWLEDGEMENT

Speed is one of the most significant causes of an accident. Nowadays, GPS receiver has become an integral part of a vehicle. Besides using in other purposes, the GPS can also monitor the speed and detect an accident. It can use a very cheap and popular GSM modem to send the accident location to the Alert Service Center. It can also send the last speed before accident which will help to assess the severity of the accident and can initiate a voice call. Beside the automatic detection system, the vehicle occupant will be able to manually send the accident situation by pressing the Manual Detection Switch. A rescue measures in time with significant preparation at the correct place can save many life. Thus, the proposed system can serve the humanity by a great deal as human life is valuable.

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