Sensor Based Automatic Accident Prevention of Vehicle

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Abstract:
The main objective of this project is to develop a system to keep the vehicle secure and protect it by the occupation of the intruders. An LCD is made flows through he. This effect emits an ultrasonic wave and receives the wave reflected back that is actuated by very little physical force. Micro switches are very widely used: among their applications are appliances, and display system can arrange at rear side of each and every vehicle. The aim is to prevent accidents by providing receiver unit in vehicle along with transmitter unit at necessary places. The accidents due to the drowsy state of the driver is prevented using eye blink sensor, similarly accident due to the drunken state is prevented using alcohol sensor which detect the alcohol from breath and stops the engine. The arduino signal conditioner and other components are powered by separate power supply which converts the 230v AC to 5v and 12v. Using LDR the light (LED) intensity has been controlled. To avoid the accident warning system, which contain alarm and display system can arrange at rear side of each and every vehicle. The main aim of this project is to develop a system automatic speed control of vehicle and accident avoidance using eye blink sensor and ultrasonic sensor. Using LDR the headlight (LED) intensity has been controlled. The alcohol sensor detects the attentiveness of alcohol gas in the air and an analog is an output reading. Crash sensor works in a milli second in an event of accident where the sensor activates the airbag.

Keywords: Eye blink sensor, Ultrasonic sensor, LDR, Alcohol detection sensor, Crash sensor

1. INTRODUCTION.

The aim is to prevent accidents by providing receiver unit in vehicle along with transmitter unit at necessary places. The accidents due to the drowsy state of the driver is prevented using eye blink sensor, similarly accident due to the drunken state is prevented using alcohol sensor which detect the alcohol from breath and stops the engine. The arduino signal conditioner and other components are powered by separate power supply which converts the 230v AC to 5v and 12v. Using LDR the light (LED) intensity has been controlled. To avoid the accident warning system, which contain alarm and display system can arrange at rear side of each and every vehicle. The main aim of this project is to develop a system automatic speed control of vehicle and accident avoidance using eye blink sensor and ultrasonic sensor. Using LDR the headlight (LED) intensity has been controlled. The alcohol sensor detects the attentiveness of alcohol gas in the air and an analog is an output reading. Crash sensor works in a milli second in an event of accident where the sensor activates the airbag.
2. HARDWARE & SOFTWARE REQUIREMENTS

**Hardware** - Arduino Mega, Arduino Uno, LCD, ZigBee, GSM, Crash sensor, Ultrasonic sensor, LDR, LED, DC Motor, Eye Blink sensor, Alcohol sensor.

**Software** - Arduino IDE, Embedded C

Block Diagram Vehicle Section

![Block diagram of Vehicle Section](image1)

Other Car Section

![Block diagram of Other Car Section](image2)

Arduino Mega

Arduino is an open-source physical computing platform based on a simple I/O board and a development environment that implements the Processing/Wiring language. Arduino can be used to develop stand-alone interactive objects or can be connected to software on your computer.

Arduino UNO

The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega8U2 programmed as a USB-to-serial converter.

ZigBee

Zigbee is for low-data rate, low-power applications and is an open standard. This, theoretically, enables the mixing of implementations from different manufacturers, but in practice, Zigbee products have been extended and customized by vendors and, thus, plagued by interoperability issues. In contrast to Wi-Fi networks used to connect endpoints to high-speed networks, Zigbee supports much lower data rates and uses a mesh networking protocol to avoid hub devices and create a self-healing architecture.

GSM Modem

A **GSM modem** is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone. When a GSM modem is connected to a computer, this allows the computer to use the GSM modem to communicate over the mobile network. While these GSM modems are most frequently used to provide mobile internet connectivity, many of them can also be used for sending and receiving SMS and MMS messages.

LCD Interfacing

![LCD Interfacing](image3)
This is an LCD Display designed for E-blocks. It is a 16 character, 2-line alphanumeric LCD display connected to a single 9-way D-type connector. This allows the device to be connected to most E-Block I/O ports. The LCD display requires data in a serial format, which is detailed in the user guide below. The display also requires a 5V power supply. Please take care not to exceed 5V, as this will cause damage to the device. The 5V is best generated from the E-blocks Multiprogrammer or a 5V fixed regulated power supply. The potentiometer RV1 is a contrast control that should be used to adjust the contrast of the display for the environment it is being used in.

3. WORKING

Crash sensor is used to find the accident. If accident is find it takes the coordination from GPS and send to the care center and also relatives with help of GSM and Zigbee. Accident occurs vehicle motor will stop automatically. The LDR is used to detect the light using PWM. Accident information will send to the other vehicle through ZigBee device using ad-hoc method. The alcohol sensor is used to detect the attentiveness of alcohol gas in the air and make the motor to stop. The Eye blink sensor is IR based, the variation across the eye will vary as per eye blink. The Ultrasonic sensor is used to make safe drive in obstacle path by sensing the distance of obstacle and make the motor to stop.

4. CONCLUSION

This project is to prevent accident in crowded environment. This project has no doubt to save precious life. Both evaluation and experiment has been performed to verify the proposed system. People have become more inclined to accident. Consequently, as an engineer need to take some stroke against this and provide the desired way out.

FUTURE SCOPE

This technique can be further enhanced to notify in two wheelers and 4 wheelers through a GPS module.

6. REFERENCES


