
DESIGN OF AUTOMATIVE SAFETY SYSTEM FOR ACCIDENT PREVENTION USING MICROCONTROLLER

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ABSTRACT:

Present Automobiles are being developed by more of electronic parts for efficient operation. Generally a vehicle was built with an analog driver-vehicle interface for indicating various vehicle status like speed, fuel level, Engine temperature etc. This project focuses on constructing a device that specializes in detecting intrusions and controlling the accidents due to glaring effect of headlight, fire accidents due to gas leakage is indicated by digital interface. Automobile safety can be enhanced by providing warnings through buzzer. The project's ultimate aim thus finalized as, one to build a general, easy-to-use and versatile system that can prevent fatal and night accidents.

KEYWORDS: Glaring effect, gas leakage, backside accidents, automotive system.

INTRODUCTION:

Most of the accidents in India can be accounted by three main reasons first being the fire or spirit accidents which happen due to ageing of fuel pipes to cause leakage. The second reason being the glaring effect of opposite vehicle's headlight. The third main reason being driver distraction. This is cited as a contributing cause in half of all accidents. In order to reduce accident severity and occurrence, future safety technologies must be improved. To support this,

automobiles will require new exterior sensors to create an electronic awareness of the traffic situation. The sensing may well have the most impact in reducing injuries from night-time accidents. However, the advanced safety features enabled by sensing will provide a significant benefit in all cases of headlight illumination, gas leakage, or driver distraction. Thus in order to reduce the accidents we have to take the necessary precautions.

LITERATURE SURVEY:

There are certain technologies that already exist to prevent accidents. The following are the different approaches such as; In2015, Design of automotive safety system using CAN protocol describes to control fire accidents and night accidents. In2012, Intelligent Car System for Accident Prevention Using ARM-7 describes a real-time online safety prototype that controls the vehicle speed under driver fatigue. To detect fatigue symptoms in drivers and control the speed of vehicle to avoid accidents. In2014, Intelligent Automatic Vehicle Accident Detection System Using Wireless Communication described the main application of which is early accident detection. It can automatically detect traffic accidents using accelerometers and immediately notify a central emergency dispatch server after an accident, using GPS coordinates.

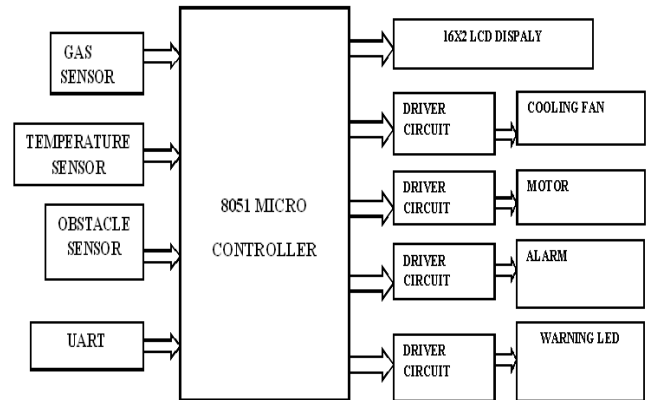
PROPOSED SYSTEM:

In order to avoid the existing problem, we are going to propose the automobile safety system using microcontroller. Here we can monitor pressure and temperature of the vehicle. The main aim of this project is to prevent back side accidents which will be detected using obstacle sensor. This sensor can also determine the light intensity medium for which head light can be dim and bright automatically to prevent from night accidents due to glaring effect of opposite vehicle.

METHODOLOGY:

When we travel at night time the opposite vehicle’s headlight will cause glaring effect for the eyes to the driver which leads to cause accidents. The obstacle sensor will observe the light intensity and automatically the sensor will dim the headlight from bright mode, when the vehicle is passed away the dim mode will change to bright mode. This sensor will also detect the obstacles in certain frequency when vehicles reach nearer at 10m distance to alert the driver from accident. If the fuel tank start to leak gas because of ageing of fuel pipes will detect the gas through sensor to automatically open the windows which avoids fire accidents.

BLOCK DIAGRAM:



TEMPERATURE SENSOR:

The LM35series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature. The LM35 thus has an advantage over linear temperature sensors calibrated in ° Kelvin, as the user is not required to subtract a large constant voltage from its output to obtain convenient Centigrade scaling. The LM35 does not require any external calibration or trimming to provide typical accuracies of $\pm 1/4^{\circ}\text{C}$ at room temperature and $\pm 3/4^{\circ}\text{C}$ over a full -55 to $+150^{\circ}\text{C}$ temperature range.

GAS SENSOR:

A **gas detector** is a device that detects the presence of gases in an area, often as part of a safety system. This type of equipment is used to detect a gas leak and interface with a control system so a process can be automatically shut down. A gas detector can sound an alarm to operators in the area where the leak is occurring, giving them the opportunity to leave. This type of device is important because there are many gases that can be harmful to organic life, such as humans or animals.

UART:

A universal asynchronous receiver/transmitter, abbreviated UART, is a computer hardware device that translates data between parallel and serial forms. UARTs are commonly used in conjunction with communication standards such as TIA (formerly EIA) RS-232, RS-422 or RS-485. The universal designation indicates that the data format and transmission speeds are configurable. The electric signaling levels and methods (such as differential signaling etc.) are handled by a driver circuit external to the UART.

OBSTACLE SENSOR:

A photoelectric sensor, or photo eye, is a device used to detect the distance, absence, or presence of an object by using a light transmitter, often infrared, and a photoelectric receiver. They are used extensively in industrial manufacturing. There are three different functional types: opposed (through beam), retro-reflective, and proximity-sensing (diffused).

CONCLUSION:

Thus to conclude obstacle is a device to prevent accidents. The main advantage of the system is that it is calculating the distance between the automobile and the obstacle, controlling the headlight illumination automatically for clear vision which lacks in the existing system. The proposed system achieved safety system with low cost.

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