

Design of Automatic Safety System for Accident Prevention Using Microcontroller.

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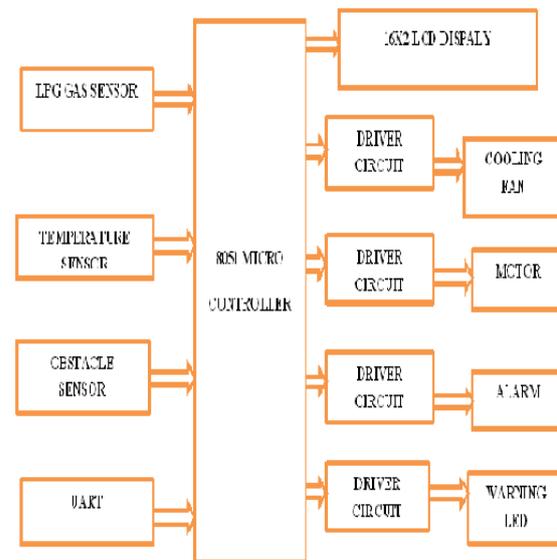
Abstract: Present automobiles are being developed by more of electronic parts for efficient operation. Generally a vehicle is built with an analog driver-vehicle interface for indicating various vehicle status like speed, fuel level, engine temperature etc. this project focuses on constructing a device that specializes in detecting intrusions and controlling the accidents due to gas leakage is indicated by digital interface. Automobile safety can be enhanced by providing warnings through buzzer. This 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: gas leakage, digital interface, detecting intrusions.

INTRODUCTION:

According to the study conducted by the Ministry of Transport and Highways, the accidents observed because of material causes such as faults in the road, weather conditions, vehicular defects etc. and a meager. Further, road accidents occur due to over speeding, alcohol or drug consumption and driver fatigue or overcrowding of vehicles. A life lost in a road accident is absolutely unnecessary. Many accidents we could not found the fault and difficult to detect how the problem occurs. Most of the accidents also 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. In order to reduce accident severity and occurrence, future safety technologies must be improved. The sensing may well have the most impact in reducing injuries from night-time accidents. My goal is to make 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.

BLOCK DIAGRAM:



MICROCONTROLLER:

The 8051 is an 8 bit microcontroller originally developed by Intel in 1980. It is the world's most popular microcontroller core, made by many independent manufacturers. A typical 8051 contains CPU with Boolean processor, 5 or 6 interrupts, 2 or 3 16-bit timer/counters, programmable full-duplex serial port, 32 I/O lines, RAM and ROM/EPROM in some models. The 8051 architecture is quite strange and original. One strong point of the 8051 is the way it handles interrupts. The microcontroller 8051 has many prominent features suitable for such interfacing and controlling applications. They are also suitable for serial port interfacing which is very much needed for data transfer.

TEMPERATURE SENSOR:

LM35 is a precision IC temperature sensor with its output proportional to the temperature (in oC). The sensor circuitry is sealed and therefore it is not subjected to oxidation and other processes.

With LM35, temperature can be measured more accurately than with a thermistor. It also possess low self-heating and does not cause more than 0.1o C temperature rise in still air. 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.

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.

UART:

A universal asynchronous receiver/transmitter, abbreviated UART, is a computer hardware device that translates between parallel and serial forms. A UART is usually an individual (or part of an) integrated circuit (IC) used for serial communications over a computer or peripheral device serial port.

LCD DISPLAY:

Liquid crystal displays, abbreviated as LCD's are passive displays, i.e. they will not actually generate the light but they modify the existing light. They convert or modulate the light under the electrical stimulus. Hence LCD'S are light controllers and they require external source of light.

BUZZER/ALARM:

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or electronic. Typical uses of buzzers and beepers include alarms, timers and confirmation of user input such as a mouse click or keystroke.

RELAY DRIVER:

A relay is an electrically operated switch. Many relays use an electromagnet to operate a switching mechanism mechanically, but other operating principles are also used. Relays are used where it is necessary to control a circuit by a low-power signal (with complete electrical isolation between control and controlled circuits), or where several circuits must be controlled by one signal.

WARNING LED:

A light-emitting diode (LED) is a two-lead semiconductor light source. It is a p-n junction diode, which emits light when activated. When a suitable voltage is applied to the leads, electrons are able to recombine with electron holes within the device, releasing energy in the form of photons.

POWER SUPPLY UNIT:

A DC supply, stays at a fixed, regular, voltage all of the time, like the voltage from a battery. A Direct Current (DC) supply is needed by most circuits as a constant reference voltage.

TRANSFORMER:

Transformers are used to convert electricity from one voltage to another with minimal loss of power. A transformer consists of two coils (often called 'windings') linked by an iron core.

OBSTACLE SENSOR:

A sensor is a device that measures a physical quantity and converts it into a signal which can be read by an observer or by an instrument. 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.

CONCLUSION:

The vehicle accident detection and alert systems provide emergency for the user as earlier, which will reduce the mortality rates. The automatic system is expensive and not available in all systems. So, I have proposed different sensors like gas sensor, obstacle sensor, temperature sensor as an intelligent automatic system to reduce night accidents and back side accidents as a prevention system with low cost to make the world a much better and safe place to live.

FUTURE SCOPE:

In future, we can reduce the rear accidents by placing the magnet in every vehicle at same poles which will repel the obstacles, so that accidents will be avoided.

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