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GSM AND GPS BASED ACCIDENT SPOT IDENTIFICATION SYSTEM

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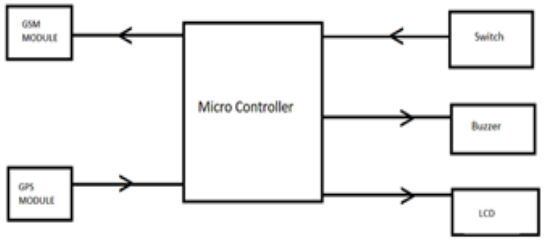
ABSTRACT

This project is aimed to provide emergency assistance to the driver and vehicle when they involved in accident. For achieving this we use an emergency switch which activates when accident occurs. If switch gets activated, then automatically GPS traces the location of the accident spot then sends SMS to the emergency number that's provided through GSM. In this project we can easily identify the accident spot so that we can immediately provide the required emergency medical assistance to the person involved in accident. By using this system, we can reduce the loss of human lives due to accidents. If we reduce the time between when an accident happens, we can save human lives by reducing mortality rates. The switch identifies the accident and that information will be given to microcontroller. The GPS immediately identifies the latitude and longitude of the location and sends that information to the Micro Controller. The Microcontroller sends the warning message via the GSM module to the police control room or a rescue team, including the location.

INTRODUCTION

Road accidents are increasing in number day by day and is one of the key causes of human deaths. One of the basic reasons for road accidents is speed. Human life is more important than anything else, and timely assistance is really important. If emergency service could get accident reports and ambulance reaches on time, more lives could be saved. In saving human lives, the time between the accident and when the ambulance reaches the site of the accident plays an important role. If we reduce the time between when an accident happens, we can save human lives by reducing mortality rates.



For saving human lives, the time between the accident and when the ambulance reaches the site of the accident plays an

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important role. If we reduce the time between when an accident happens, we can save human lives by reducing mortality rates. GPS has become an integral part of a vehicle system nowadays. In real time applications, we place the emergency switch inside the vehicle bumper. If accident occurs, switch immediately activates, and identifies the accident and that information will be given to microcontroller. The GPS immediately identifies the latitude and longitude of the location and sends that information to the Micro Controller. The Microcontroller sends the warning message via the GSM module to the police control room or a rescue team, including the location. So, after receiving the information, the police or relatives can automatically track the location via smart phones. So that we can easily trace the accident spot to provide emergency assistance to the victim and the vehicle when they are involved in an accident.

Hardware Requirements:

- 8051 Micro Controller (AT89C51)
- GSM Module (SIM 800L)
- GPS Module (NEO 6M)
- LCD Display
- Buzzer
- Switch (Push Button)

Software Requirements:

- KEIL Micro vision IDE for Programming.
- Proteus Professional for Designing.
- Embedded C Language.

AT89C51 MICROCONTROLLER

Microcontroller is a general-purpose device, which integrates a number of the components of a microprocessor system on to single chip. It has inbuilt CPU, memory and peripherals to make it as a mini computer. A microcontroller combines on to the same microchip:

- The CPU cores
- Memory (both ROM and RAM)
- Some parallel digital I/O

Microcontrollers will combine other devices such as:

- A timer module to allow the microcontroller to perform tasks for certain time periods.
- A serial I/O port to allow data to flow between the controller and other devices such as a PIC or another microcontroller.
- An ADC to allow the microcontroller to accept analogue input data for processing.

Microcontrollers are:

- Smaller in size

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- Consumes less power
- Inexpensive

Micro controller is a stand-alone unit, which can perform functions on its own without any requirement for additional hardware like I/O ports and external memory.

The heart of the microcontroller is the CPU core. In the past, this has traditionally been based on 8-bit microprocessor unit. For example, Motorola uses a basic 6800 microprocessor core in their 6805/6808 microcontroller devices.

In the recent years, microcontrollers have been developed around specifically designed CPU cores, for example the microchip PIC range of microcontrollers.

AT89C51 is the 40 pins, 8-bit Microcontroller manufactured by Atmel group. It is the flash type reprogrammable memory. Advantage of this flash memory is we can erase the program with in few minutes. It has 4kb on chip ROM and 128 bytes internal RAM and 32 I/O pin as arranged as port 0 to port 3 each has 8-bit. port 0 contain 8 data line(D0-D7) as well as low order address line (AO-A7).

Port 2 contain higher order address line (A8-A15). Port 3 contains special purpose register such as serial input receiver register SBUF, interrupt INT0, INT1 and timers T0, T1 many of the pins have multi functions which can be used as general purpose I/O pins (or) Special purpose function can be decided by the programmer itself.

HARDWARE COMPONENTS

A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses. High-power resistors that can dissipate many watts of electrical power as heat may be used as part of motor controls, in power distribution systems, or as test loads for generators. Fixed resistors have resistances that only change slightly with temperature, time or operating voltage. Variable resistors can be used to adjust circuit elements (such as a volume control or a lamp dimmer), or as sensing devices for heat, light, humidity or chemical activity.

The only trick involved in using this equation is to keep the units consistent. Capacitance is in farads, the area “A” is in square meters and the distance between electrodes “D” is in meters. “K” is a ratio and a pure number without dimensions. This

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comes about when units other than farads and meters are used. Microfarads and inches might be used, for example. To get an idea of what a farad is, calculate the area which would be necessary in a capacitor built to have one farad, to operate in a vacuum, and to have a spacing between electrodes of one milli-meter. First, turn the equation around to solve for the area and then plug in the values known. This calculates to 113 million square meters, which would be a field about 6.5 miles on a side. It's not hard to see why one farad capacitors aren't made very often and when they are, they are never made with a vacuum dielectric and a one milli-meter spacing. All commercial capacitors use some different dielectric material with a higher value of K. There is a tendency toward the higher values of K. (With a K of 10, there would be a reduction of one farad capacitor area to a mere 11.3 million square meters!).

The first PCBs used through-hole technology, mounting electronic components by leads inserted through holes on one side of the board and soldered onto copper trace on the other side. Boards may be single-sided, with an unplanted component side, or more compact double-sided boards, with components soldered on both sides. Horizontal installation of through-hole parts with two axial leads (such as resistors, capacitors, and diodes) is done by bending the leads 90 degrees in the same direction, inserting the part in the board (often bending leads located on the back of the board in opposite directions to improve the part's mechanical strength), soldering the leads, and trimming off the ends. Leads may be soldered either manually or by a wave soldering machine.

CONCLUSION

In this project accident-avoidance system has been proposed. Design is developed using Microcontroller. System is designed, implemented and tested for vehicle safety. Many works have to be done to improve the performance such as power consumption during detection of sensor. The result and analysis of this practical experiment shows expected output and guaranteeing safety of driver and health monitoring and special zone indications. It supports a cost-effective system to provide modest and flexible conditions. This design has many more future possibilities to make safety system more advance and efficient. Further By providing the internet connectivity to the proposed system we can also monitor and

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access the vehicle over the world through Embedded system.

FUTURE SCOPE

As a further implementation to the developed model, we can assemble GPS module in order to identify exact location.

- This can also be developed by interconnecting a camera to the controller module that take place the photograph of the accident spot that makes the tracking easier.
- If anybody steals vehicle, we can easily find our car around the globe by using GPS and GSM.

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