Smart Accident Identifier and Reporter

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ABSTRACT

Security in travel is primary concern for everyone. This project presents an automotive localization system using GPS and GSM-SMS services. When the vehicle is involved in an accident immediately an SMS will send to predefined numbers with GPS location by using vibration sensor. A switch is provided because if the person presses the switch it indicates the person is in a safe condition. Project is used to know the information about the vehicle; information is nothing but the vehicle number and location by using GPS. This system also can be interfaced with vehicle airbag system. This detection and messaging system is composed of a GPS receiver, microcontroller and a GSM modem. GPS receiver gets the location information from satellites in the form of latitude and longitude. The project is built around the MSP430 microcontroller. This microcontroller provides all the functionality of the SMS alert system. It also takes care of filtering of the signals at the inputs. The uniqueness of this project is, not only alerting the neighbors by its siren, but also it sends a caution SMS to mobile numbers. In this SMS informer system the vehicle's speed, direction is sensed by using the sensor called IR sensor. The IR Sensor is fixed to the wheel and the steering part of the vehicle. The sensed output signal is amplified and given to the microcontroller.
Keywords: Automation, VibrationSensor, Microcontroller, MSP430, GSM Module, GPS, Vibration Sensor

I. INTRODUCTION

In this modern world no one care about what is happening around them and also nobody thinks of helping others in an emergency. The main objective of this project is to inform the accident to the nearby hospital or patrol automatically. It is possible to save lives by informing at the right time to hospital. There is no any similar or existing methods. It is used to sent information to the patrol and other nearby hospitals in case of accidents. Our goal is to enhance the safety requirements and avoid accidents.
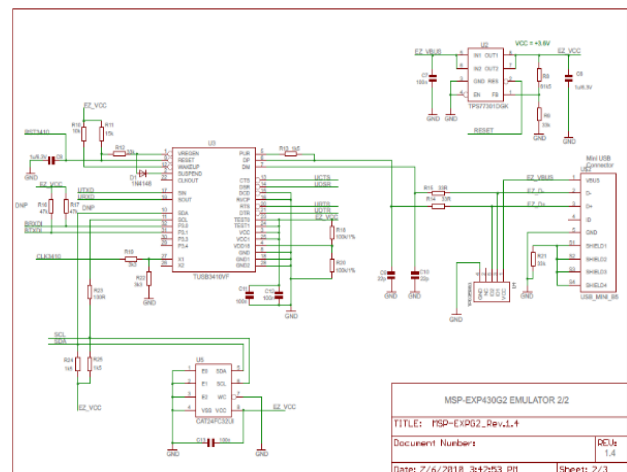
II. METHODS AND MATERIAL

1. Existing System

In the existing method there is no safety methods and no reporting devices in the individual One has to expect the help from others to report to someone who is nearby and mostly life is lost because of not doing things in timely action Only airbags and few aiding methods are currently available which minimize the risk.

Figure 1. System

2. Proposed System

- In the proposed method the accident that is happening is been reported at the right time automatically
- The individual does not need to worry or seek some ones help

3. Material
Hardware Required:

- MSP430
- GSM Module
- GPS
- Vibration Sensor
- Power Supply

A. MSP430 MICROCONTROLLER:

The MSP-EXP430G2 LaunchPad Development Kit is an easy-to-use microcontroller development board for the low-power and low-cost MSP430G2x MCUs. It has on-board emulation for programming and debugging and features a 14/20-pin DIP socket, on-board buttons and LEDs & BoosterPack Plug-in Module pinouts that support a wide range of modules for added functionality such as wireless, displays & more.

The MSP-EXP430G2 LaunchPad also comes with 2 MSP430 devices, with up to 16kB Flash, 512B RAM, 16MHz CPU speed and integrated peripherals such as 8ch 10-bit ADC, timers, serial communication (UART, I2C & SPI) & more.

B. GSM

GSM (Global System for Mobile communications: originally from Group Special Mobile) is the most popular standard for mobile phones in the world. Its promoter, the GSM Association, estimates that 80% of the global mobile market uses the standard GSM is used by over 3 billion people across more than 212 countries and territories. Its ubiquity makes international roaming very common between mobile phone operators, enabling subscribers to use their phones in many parts of the world. GSM differs from its predecessors in that both signaling and speech channels are digital, and thus is considered a second generation (2G) mobile phone system. This has also meant that data communication was easy to build into the system. GSM EDGE is a 3G version of the protocol.

Figure 1. GSM

C. GPS

The Global Positioning System is a space age navigational system that can pinpoint your position anywhere on the globe, usually within a few yards or meters. This amazing technology is available to everyone, everywhere, day and night, and best of all, at no cost for use of the navigational data. GPS uses a constellation of 24 satellites in precise orbits approximately 11,000 miles above the earth. The satellites transmit data via high frequency radio waves back to Earth and, by locking onto these signals; a GPS receiver can process this data to triangulate its precise location on the globe.

GPS operates 24 hours a day, in all weather conditions, and can be used worldwide for precise navigation on land, on water and even in the air. Some of its many current applications include: boating, fishing, hunting, scouting on land or from the air, hiking, camping, biking, rafting, pack trips by horseback, hot air ballooning, general aviation, snowmobiling and skiing, search and rescue, emergency vehicle tracking, 4 wheeling, highway driving and a host of other outdoor activities where accurate positioning is required.

D. VIBRATION SENSOR:

The above diagram shows the SCU of output from crystal. At first output potentials from the crystal is very low in voltage(0.1 likewise). So the first stage of SCU is operational amplifier (non inverting amplifier). It will increase the voltage level of output from the crystal.

The next stage is the comparator. The non inverting input of the comparator connected to variable resistance pot for adjustment of accuracy. The amplified signal from the piezoelectric crystal fed into the another input to the comparator. The comparator outputs the +12 or -12 voltages according to its greater input. From the output of comparator connected to the Q1 transistor's base.

In normal conditions there is no voltage in inverting input of the comparator. So the non inverting input is higher. Now the output of the comparator is +12. If the output of comparator is +12v, the Q1 transistor will conduct and ground the voltage applied across the collector. We have taken one output in collector of the transistor Q1. this is LOGIC 0, Then the output from the

collector of transistor Q1 has given to base of Q2. There is no base voltage across the base of Q2. so it will not conduct. We can also get the LOGIC 1 from the collector of Q2 while the same condition.

4. Block Diagram
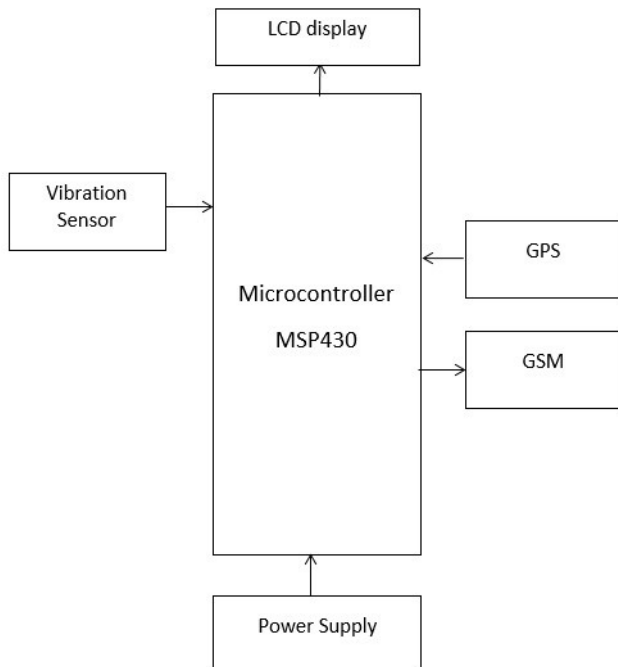
5. Objectives

1. To make information senting to hospital without manual help.
2. To prevent life loss.
3. To help at right time.

III. RESULTS AND DISCUSSION

This paper helps to provide a idea of safety system for accident and informing so that it can used to save lives.

IV. ACKNOWLEDGEMENTS

V. CONCLUSION

- Inform throught the SMS system to nearby places and alert the hospital and patrol
- It is a low cost & design efficient system.
- Low in power consumption.

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