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ACCIDENT DETECTION AND RESCUE PROCESS USING LIVE BOX SYSTEM

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ABSTRACT

In this paper it introduces a real-time car tracking system via Google Earth. Accident detection and rescue process using IoT and cloud systems with different types of sensors such as temperature, gas and vibration sensors in two key components: Connecting IoT devices in the vehicle to vehicle location and status The built-in transmitter module that provides the information determines and sends SMS and data storage on cloud websites. The second fixed module is a receiving module for collecting and processing transmitted information in a Google Earth compatible format for online remote monitoring of vehicle location and status. The vehicle's transmit position was filtered with a Kalman filter for accurate tracking. Improved 2DRMS accuracy of estimated vehicle coordinates. The accuracy of the filtered coordinates was less than 15 meters compared to the transmit coordinates received from the in-vehicle GPS module, which was about 43 meters. Use the panic switch to control the broadcast information.

INTRODUCTION

A Wireless device Network (WSN) may be a network consisting of spatially distributed autonomous devices exploitation sensors to hand in glove monitor physical or environmental conditions, like temperature, sound, vibration, pressure, motion or pollutants, at totally different locations. the event of wireless device networks was originally driven by military applications like field police work. However, wireless device networks square measure currently utilized in several civilian application areas, together with atmosphere and home ground observance, attention applications, homeautomation, and control.

The ability to accurately sight a vehicles location and its standing is that the main goal of automobile mechanical phenomenon watching systems. conjointly the high demand of vehicles has conjointly exaggerated the traffic hazards and also the road accidents. this is often thanks to the shortage of best emergency facilities offered in our country this style may be a system which may sight accidents in considerably less time and sends the fundamental info to tending center among a couple of seconds covering geographical coordinates, the time and angle during which a vehicle accident had occurred.

Our project aims to gift a technology mechanically detection the accident and a hardware pursuit device supported GSM/GPS technology informing at the prevalence of accident with enough details like actual location and time at that accident happened. This project can establish a communication between the management station and also the unit put in in vehicles. Vehicles can have GPS/GSM enabled pursuit modules and can be caterpillar-tracked in real time victimisation cellular networks. The software package embedded within the microcontroller can management the varied operations of the device by watching undulation from the vibration sensing element.

Just in case of accident the device can send associate degree alert message together with location knowledge from GPS module to manage station victimization GSM network. it's a comprehensive and effective answer to the poor rescue response just in case of accident. The accident reportage will mechanically notice a traffic accident, seek for the spot then send the fundamental info to the rescue agency covering geographical coordinates and also the time and circumstances during which a traffic accident came about. At the server finish, an impression operate can extract relevant knowledge and store it in an exceedingly information, to that accident info from prototypes are going to be polled in real time. Our system combines advanced hardware style and complicated management technology into a compact, reliable package.

RELATED WORKS

- In existing system, they trigger for several types of crash such as vehicle getting accidents, engine temperature & different road location.An important

indicator of survival rates after which an accident occurred is the time between the accident and when emergency medical team are dispatched to the accident location.Short range tocommunicate in zigbee between transmitter and receiver.The main objective of the project is to build an integrated system for emergency rescue services in the event of road accidents using live box system

PROPOSED SYSTEM

Development of an integrated system for rescue services in traffic accidents. The project will enable vehicle safety authorities to improve accident analysis and accident reporting after event recording and reduce the time it takes to reach the accident site using IoT modules with different types of sensors and cloud page storage. The focus is on building the infrastructure. The occurrence of an accident is reported to the police or hospital when local residents in the area discover the accident or when the accident is witnessed. Callers are usually uncertain about injuries, and according to a survey of ambulance delays to the crash site, is up to 5 minutes or more for ambulances to arrive in developed countries, even if ambulance services are in place.

Panic transfer use to manipulate the sending records. The records despatched from one car to some other community station. The records has been despatched to close by base station or police station or medical institution or home. Radiation jammer use to manipulate the incoming calls whilst driving.

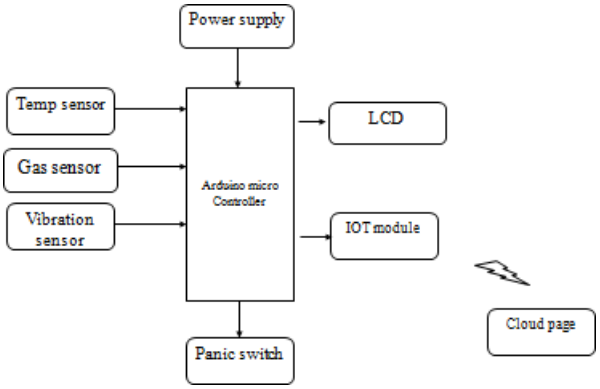

Figure 1 :Block diagram of proposed system

HARDWARECOMPONENTS

A. ARDUINO

Arduino is a computer hardware and software company, project, and user community that designs and manufactures microcontroller kits for building digital devices and interactive objects that can detect and control objects in the physical world. The products of the project are distributed as open source hardware and software licensed under the GNU Inferior General Public License (LGPL) or the GNU General Public License (GPL) [1], and are distributed on Arduino boards. Enables manufacturing and allows anyone to distribute the software. Arduino boards are available in pre-assembled form or as do-it-yourself kits.

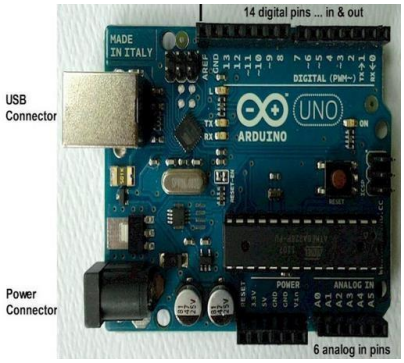

Figure 2 :Arduino Uno SMD R3

The Arduino Uno R3 is a microcontroller board and it is based on the ATmega328. It has 14 digital input and output.It has 6 analoginputs,a USB connector,a 16MHz crystal oscillator, a power jack, an ICSP header, and a reset button. It contains everything that you need for the support of a microcontroller. Start by connecting to your computer with a USB cable or powering on with an AC to DC adapter or battery.

The Uno differs from all the other previous boards and it does not use the FTDI USB toserial driver chip. Instead, the Atmega16U2 (Atmega8U2 up to version R2) is programmed and used as a USB to serial converter. Uno board revision 2 (A000046) has a resistance that pulls the 8U2 HWB line down to ground, making it easy to enter DFU mode.

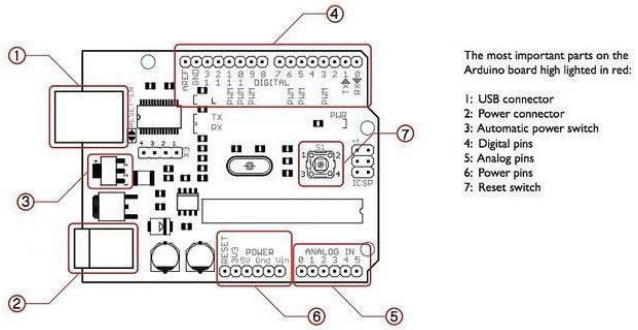

Figure 3: Figure of Arduino uno R3 Microcontroller

B. TEMPERATURE SENSORS

Temperature sensors are essential in a variety of everyday products. For example, household ovens, refrigerators, and thermostats all rely on temperature maintenance and control for proper functioning. Temperature control can also be applied to chemical engineering. Examples include keeping the temperature of the chemical reactor at the ideal set point, monitoring the temperature at which a runaway reaction is possible to ensure worker safety, and the temperature of the stream released to the environment. It may be maintained to minimize harmful environmental impacts.

Humans generally perceive temperature as "hot," "neutral," or "cold," but chemical engineering requires accurate and quantitative temperature measurements to accurately control the process. This is achieved by using a temperature sensor and temperature controller that processes the signal received from the sensor.

From a thermodynamics point of view, temperature changes as the function of the average energy of molecular movement. When the heat is added to a system, molecular motion increases and thus the system experiences an increase in temperature. It is difficult but to directly measure the energy of molecular movement, therefore temperature sensors are designed to measure a property which changes in response to temperature. The devices are calibrated to traditional temperature scales using a standard.

A temperature sensor is a device for measuring the temperature of a medium. There are two types of temperature sensors: 1) contact sensors and 2) non-contact sensors. However, the three main types are thermometers, RTDs, and thermocouples. All three of these sensors measure physical properties that change as a function of temperature (for example, the amount of liquid, the current through the wire). In addition to the three main types of temperature sensors, many other temperature sensors are available.

C.RESISTANCE TEMPERATURE DETECTORS

The second most commonly used temperature sensor is a resistance temperature detector (RTD, also known as a resistance temperature detector). Unlike filling system thermometers, RTDs provide an electrical means of measuring temperature, making it more convenient to use in computerized systems. RTD uses the relationship between electrical resistance and temperature. This is either linear or non-linear. RTDs have traditionally been used for their high precision and precision. However, at high temperatures (above 700 ° C), the external sheath, including the thermometer, deteriorates, resulting in very inaccuracies. Therefore, the RTD usage is more accurate and it is preferred at lower temperature ranges.

There are two main types of RTDs, traditional RTDs and thermistors. Traditional RTDs use metal detectors that provide a linear relationship between temperature and resistance. As the temperature of the metal rises, the random increase in molecular motion impedes the flow of electrons. Increased resistance is measured as a decrease in the current flowing through the metal when a fixed voltage is applied. Thermistors use semiconductor sensors that provide a power functional relationship between temperature and resistance.

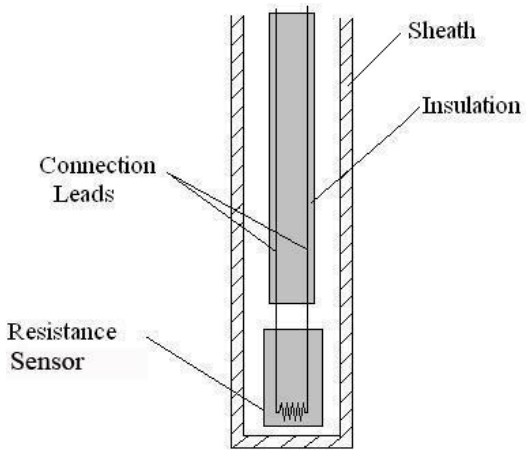

Figure 4 :Schematic Diagram RTD Structure

As shown in the figure, the resistance sensor itself is responsible for measuring the temperature. Sensors are most commonly made of metals such as platinum, nickel and copper. The material selected for the sensor determines the temperature range in which the RTD can be used. For example, the most common type of resistor, the platinum sensor, ranges from about 200 ° C to 800 ° C. (Table 1 shows examples of temperature ranges and resistances for the most common resistance metals). Two isolated connection lines are connected to the sensor. These lines continue to complete the resistance circuit.

D. LCD

A liquid crystal display (LCD) is a flat video display that uses the light modulating properties of liquid crystals. They do not emit the light directly. LCDs are available to display arbitrary or fixed images that can be displayed or hidden, such as preset words, digits, and 7 segment displays as in a digital clock. They use the basic technology,only for the arbitrary images which are made up of a large number of small pixels do not use the basic tachnolog . LCDs are used in a widely used in computer monitors, TVs, instrument panels and aircraft cockpit displays. These are common in consumer devices such as video players, gaming devices, watches, calculators and phones, and have replaced brown tube (CRT) displays in most applications. It can be used on a wider screen size than CRTs and plasma displays, and because it does not use phosphorescent agents, you do not have to worry about image retention. However, LCDs tend to have afterimages.

LCD screens are more energy efficient than CRTs and can be safely disposed of. Due to its low power consumption, it can be used for battery-powered electronic devices. It is an electronically modulated optical device that consists of any number of segments filled with liquid crystal and is placed in front of a light source (backlight) or reflector to produce a color or monochrome image. The liquid crystal was first discovered in 1888. By 2008, global sales of TVs with LCD screens exceeded annual sales of CRT sets. CRTs have been deprecated for most purposes.

E. POWER SUPPLY

The AC voltage (typically 220Vrms) is connected to a transformer that lowers this AC voltage to the desired level of DC output. Next, the diode rectifier provides the full-wave rectifier voltage. This voltage is first filtered with a simple capacitor filter to produce a DC voltage.

The regulator circuit eliminates ripple and maintains the same DC value at the input .The DC voltage changes or the load connected to the DC output voltage changes.It is usually obtained with one of the common voltage regulator IC units.

I. SOFTWARESPECIFICATION

A. PROTEUS

The proteus layout suite is a proprietary software program device suite used often for digital layout automation. The software program is used in particular via way of means of digital layout engineers and technicians to create schematics and digital prints for production published circuit boards.

The Proteus Design Suite is a entire software program answer for circuit simulation and PCB layout. It incorporates numerous modules for schematic capture, firmware IDE and PCB format that seem as tabs internal a single, incorporated application

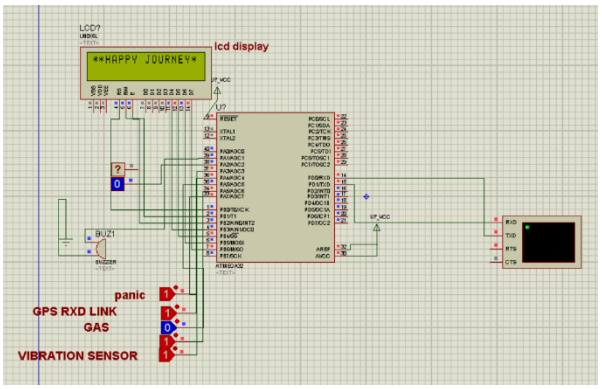

Figure 5 : Simulation diagram

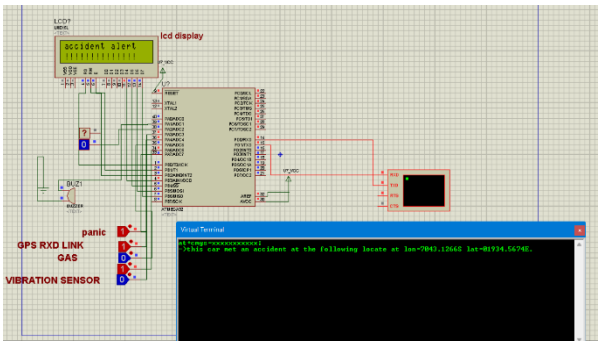

Figure 6 : Simulation diagram during accident alert

II. OUTPUT

The output for the Accident detection and rescue process using live box system is obtained from the following hardware connection.

S.No	Parameter	Range	LCD Display
1	Temperature Sensor	T>45°	Accident Alert!!
2	Gas Sensor	Gas leakage detected	Fuel Leakage
3	Vibration Sensor	If vibration detected	Accident Alert!!
4	Temperature Sensor	T<45°	Happy Journey
5	Gas Sensor	No leakage	Happy Journey
6	Vibration Sensor	No vibration	Happy Journey

III. CONCLUSION

Overall, accident detection devices and systems can be the changing factor in road safety. Life is priceless and we should be doing whatever possible to make roads safer and WHO has already predicted 1.9 million casualties by the year 2020.Gradually with the awareness from both the vehicle owners and the Government, road accidents can be reduced. In addition it will help save lives, aid in better data collection and build an infrastructure solution using Emergency Crash Reporting Software to support the rescue services of the country.

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REFERENCES

[1]Yijun Yu, Danny Barthaud, Blaine A.Price, AroshaK.Bandara, Andrea Zisman, Bashar Nuseibeh, "Live Box : A Self-Adaptive Forensic-Ready Service for Drones", IEEE, 2019.

[2] "Pure storage," https://www.purestorage.com/.

[3] J. Colgrove, J. D. Davis, J. Hayes, E. L. Miller, C. Sandvig, R. Sears, A. Tamches, N. Vachharajani, and F. Wang, "Purity: Building fast, highly-available enterprise flash storage from commodity components," in Proceedings of the 2015 ACM SIGMOD International Conference on Management of Data (SIGMOD '15).

[4] "Netappsolidfire," https://www.solidfire.com/.

[5] "Dell emcxtremio," https://www.dellemc.com/en-us/storage/xtremio- all-flash.htm.

[6] M. Hao, G. Soundararajan, D. Kenchammana-Hosekote, A. A. Chien, and H. S. Gunawi, "The tail at store: A revelation from many hours of disk and SSD deployments," in Proceedings of the 14th USENIX Conference on File and Storage Technologies (FAST '16).

[7] J. He, D. Nguyen, A. C. Arpaci-Dusseau, and R. H. Arpaci-Dusseau, "Reducing file system tail latencies with chopper." in Proceedings of the 13th USENIX Conference on File and StorageTechnologies (FAST '15).

[8] D. Skourtis, D. Achlioptas, N. Watkins, C. Maltzahn, and S. A. Brandt, "Flash on rails: Consistent flash performance through redundancy." in Proceedings of the 2014 conference on USENIX Annual technical conference (ATC
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