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Mishap detection and astute action using IOT

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ABSTRACT

The Internet of Things (IoT) is an arrangement of interrelated computing gadgets, mechanical and digital machines, objects, animals or individuals that are given one kind of an identifiers and the capacity to exchange information over a system without requiring human-to-human or human-to-PC communication. IoT is a new concept that has evolved from the convergence of wireless technologies. Wireless communication is the transfer of information or signal between two or more points that are not connected by an electrical conductor. In IoT devices equipped with Wi-Fi allow the machine-to-machine communication. Using this form of industrial machines to wearable or wireless devices, using built-in sensors to gather data and take action on that data across a network. These systems go beyond simple reporting of each vehicle's location, offering fleet managers a wealth of information about their vehicles and their drivers. If vehicle had accident, the alert message is sent to the rescue team in a short time, which will help in saving the valuable lives. A Switch is also provided in order to terminate the sending of a message in rare case where there is no casualty, this can save the precious time of the medical rescue team. When the accident occurs the alert message is sent automatically to the police station.

INTRODUCTION

Objective

The main objective of our project is immediate caution of road accidents to safeguard the human life. By utilizing this project the road accidents will be located easily by using mobile phone through GPS. By detecting road accidents it will alert nearby police station and hospital through cell site. [1-5]

Introduction

The high demand of automobiles has also increased the traffic hazards and the road accidents.

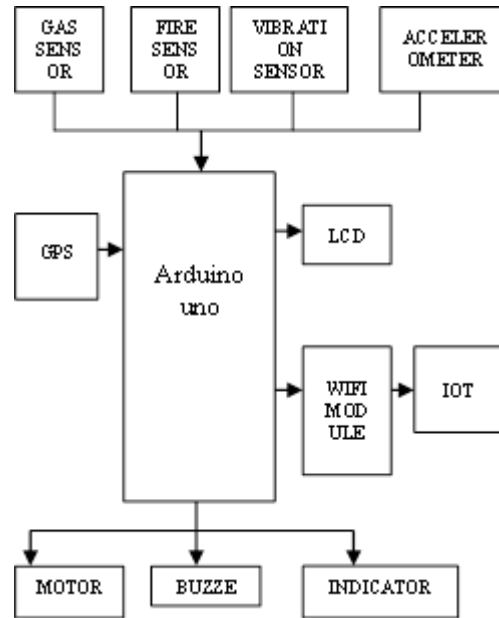
Life of the people is under high risk. This is because of the lack of best emergency facilities available in our country [6-10].

BLOCK DIAGRAM

The block diagram for the project is given below. The four parameters like temperature, gas, angle and vibration are measured. When it goes above the preset value the controller activates and send the corresponding message to the relevant peoples through IoT. The local display is kept inside the vehicle for the inmate's reference for the leakage of gas [11-18].

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COMPONENTS USED

Arduino uno

The Arduino UNO is an open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino.cc. The board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits. The board has 14 Digital pins, 6 Analog pins, and programmable with the Arduino IDE (Integrated Development Environment) via a type B USB cable. It can be powered by a USB cable or by an external 9 volt battery, though it accepts voltages between 7 and 20 volts. It is also similar to the Arduino Nano and Leonardo. The hardware reference design is distributed under a Creative Commons Attribution Share-Alike 2.5 license and is available on the Arduino website. Layout and production files for some versions of the hardware are also available. "Uno" means one in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino, now evolved to newer releases. The Uno board is the first in a series of USB Arduino boards, and the reference model for the Arduino platform. The ATmega328 on the Arduino Uno comes preprogrammed with a

bootloader that allows uploading new code to it without the use of an external hardware programmer. It communicates using the original STK500 protocol. The Uno also differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it uses the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter

Wifi module-ESP8266

In this module they are used L106 32-bit RISC microprocessor core based on the Tensilica Xtensa Diamond Standard 106Micro running at 80 MHz. Espressif Systems released a software development kit (SDK) for programming the chip directly, which removed the need for a separate microcontroller.[7] Since then, there have been many official SDK releases from Espressif; Espressif maintains two versions of the SDK – one that is based on FreeRTOS and the other based on callbacks.

Gps

GPS Stands for "Global Positioning System." GPS is a satellite navigation system used to determine the ground position of an object. GPS technology was first used by the United States military in the 1960s and expanded into civilian

use over the next few decades. Today, GPS receivers are included in many commercial products, such as automobiles, smartphones, exercise watches, and GIS devices.

Gas detector

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 or other emissions and can interface with a control system so a process can be automatically shut down.

Fire sensor

A flame detector is a sensor designed to detect and respond to the presence of a flame or fire, allowing flame detection. A flame detector can often respond faster and more accurately than a smoke or heat detector due to the mechanisms it uses to detect the flame.

Vibration sensors

Vibration sensors are sensors for measuring, displaying, and analysing linear velocity, displacement and proximity, or acceleration. Vibration however subtle and unnoticed by human senses is a tell-tale sign of machine condition.

Accelerometer

Most accelerometers are Micro-Electro Mechanical Sensors (MEMS). The basic principle of operation behind the MEMS accelerometer is the displacement of a small proof mass etched into the silicon surface of the integrated circuit and suspended by small beams.

Existing system

In the existing system, when the vehicle is met with an accident or a crash architecture and design methodology is proposed it analyse the data provided by the vehicle mounted with sensors and

health data sent by passenger's wearable devices to detect accidents in real time. After detecting the accidents, system assesses the impact of the accident. Then it either alerts relevant people for rescue action, but this action consumes more time as its data measurement rate is low and when the vehicle is met with even small accident it sends the alert message to corresponding peoples. The response at correct time can save the life but if the response is low then many lives cannot be rescued. In existing system, GSM was used for communication. Using this there will delay in sending the messages continuously. In advanced ambulance system, there will be delay in communicating with the responsible persons. The internal conditions of the accident vehicle is not conveyed in the existing systems.

PROPOSED SYSTEM

Our project work on the principle of detection and tracking of accident. The system is on and initialization. If vehicle is normal, no information sends to rescue team. Whenever accident occurred, the vehicle changes its direction randomly and vibrates with high frequency.

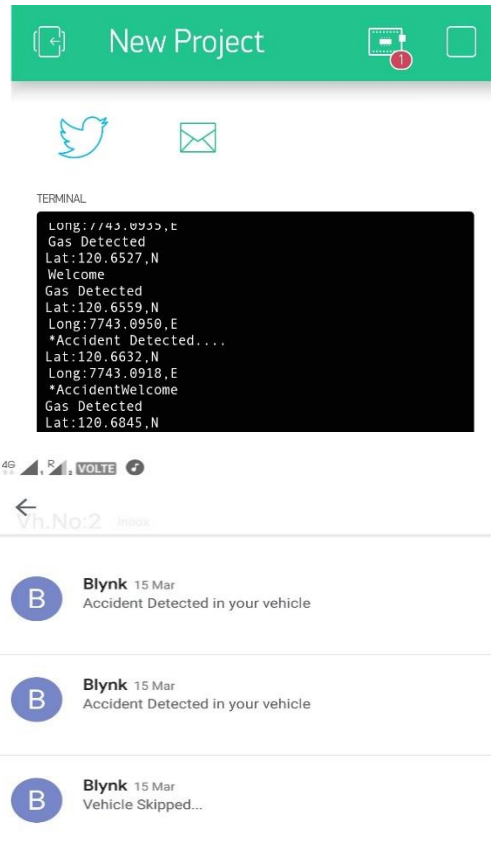
The MEMS sensor detects the happening with vehicle. The controller get the input from sensor and send the accident alert information to rescue team and family member and location of the accident place through WIFI and GPS .It can facilitate connectivity to the nearest hospital and provide medical assistance through IOT technology.

RESULT

This project can save the human life by taking necessary action at necessary time. The internal conditions like leakage of gas and fire.

S.NO	PARAMETER	VEHICLE CONDITION	INDICATION	REMARKS
1	Leakage of gas	Engine gets off	Buzzer on	Message is sent to the relevant persons
2	Fire detected	Engine gets off	Buzzer on	
3	Vehicle skip	-	Buzzer on	
4	Detection of vibration	-	Buzzer on	

OUTPUT



Hardware setup



CONCLUSIONS

We have proposed a system that aims to detect an accident and notify the monitoring systems like ambulance and hospital succeeded by controlling traffic signals in favour of ambulance. By this new framework the time slack is diminished by applying the RF advancements that controls the movement signals. The rescue vehicle which is close to the mishap area is educated by the server. This guarantees the decreased time hole between the mishap spot and healing facility. In future we can utilize cloud to store all the data in regards to the closest hospitals, current traffic movement. The information put away in cloud may play key part in immediate response and traffic monitoring system to reach the mishap spot in short span on time. In

recent days, the occurrence of the accidents is more. This alarming rise in the accidents leads to loss of many lives. The lack of treatment in the proper time is the major reason for many deaths. The major causes may be the late arrival of ambulance or no person at the place of accident to give information to the ambulance or family members. The proposed work offers a solution to this problem by introducing accident detection and reporting system aiming to save at least half the lives that are lost due to bike accidents. In future, this system could be implemented for lock protection and for other safety purposes. It could also be implemented to will account to the responsibility of saving many lives.

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