VEHICLE SAFETY AND MONITORING SYSTEM USING ARM PROCESSOR

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Abstract

In this paper, emerging developments in vehicle tracking, monitoring, and network warnings are explored, classified and identified. A daunting issue is with vehicle detection, surveillance and warning systems. Due to shortcomings in the proper position of the vehicle and the device alerting problem, there are several difficulties in locating, controlling and alarms vehicles. The GPS is the most commonly utilized car tracking system, which periodically manages the location of cars. In order to understand the current position of the RFID car as one of the tools for the bus surveillance system in several applications, the tracking system is used in transport and control with the GPS transceiver. The most widely used network warnings are GSM (Global Mobile Communication System). Alerting device is important for providing passenger, owner or user with the location and information about the vehicle.

Introduction

The method of this project working is described as follows. The project sum comprises of two parts. These are segment for cars and section for tracking. The machinery of this project is mounted inside a truck which is not accessible to others in the automobile segment. The vehicle is moving with the aid of MEMS sensor and here we have GPS (Global Positioning System) module which helps us to get the vehicle's graphical position and show these location values on the LCD (Liquid Crystal Show). We have temperature sensor in this project and it is interfaced with the micro device. Temperature sensor through which the volume of temperature released from the vehicle can be calculated. Such qualities are shown on the LCD, too. If this reaches the maximum level, the OWNER (or) is told about the control area, which includes the exact position of the vehicle and the alert detail.

The GSM modem is a revamped router that incorporates a SIM card and operates with a mobile operator. From the viewpoint of a mobile operator, the GSM network acts like a mobile phone. The GSM modem can communicate via the mobile network using the GSM modem when connected with an appliance. This GSM modems will, however, be used mostly for mobile communication to send and receive text messages and text messages GSM modem can be a wired cable, usb, wireless Internet connection or a mobile phone with a GSM modem. The ARM7TDMI-S is a versatile and streamlined ARM7TDMI 16-bit, 32, 32-bit, high-speed 32 kb to 512 KB built-in 32 kb flash memory interface. The 32-bit code will run at full clock time with a 128-bit memory interface and unique processor architecture. The preferred 16-bit thumb mode eliminates coding for critical file size applications by more than 30% due to the small size and low power consumption of the device. The most recent major development in mapping and tracking systems is the Global Positioning System (GPS). The stars had been used for astronomy in the past. The world today needs greater accuracy. The current range configuration is equivalent to the satellite size. When two satellites are used, then the recipient must be on both spheres ' top, which is the junction of the two spheres or a circle's diameter.

Liquid crystal type of display that is used in digital watches and many laptops. LCD screens have two pieces of polarizing fluid between them, with a liquid crystal solution. The electrical current that travels through the material aligns the crystals so that light cannot travel into them. A crystal is therefore like a shutter which enables either the light to go or the light to be blocked. LCDs have become very popular in many smart devices over the last few years to display information. Microcontrollers typically check for complex machines. We become easier to handle. The 20 character x 4 row displays are most commonly seen, but they have a variety of shapes and sizes. The LM35 series are direct integrated circuit temperature sensors whose voltage is linearly commensurate with Celsius temperature. As the consumer does not need

to deduct a broad continuous voltage from the display to achieve a reasonable Centigrade scale the LM35 has a benefit over linear temperature sensors measured at ° Kelvin.

Microelectronic integrated circuits can be viewed as the "brains" of a device, and MEMS enhances this decision-making capability with "heads" and "weapons" to allow Microsystems to feel and monitor the world. Sensors collect environmental knowledge by calculating electronic, electrical, biochemical, chemical, visual, and magnetic anomalies. One of the simple and common modules of sensors in an electronic device is an infrared sensor circuit. This system is similar to the imaginative senses of humans which can be used to identify obstacles and is one of the popular real-time applications. This circuit contains components below.

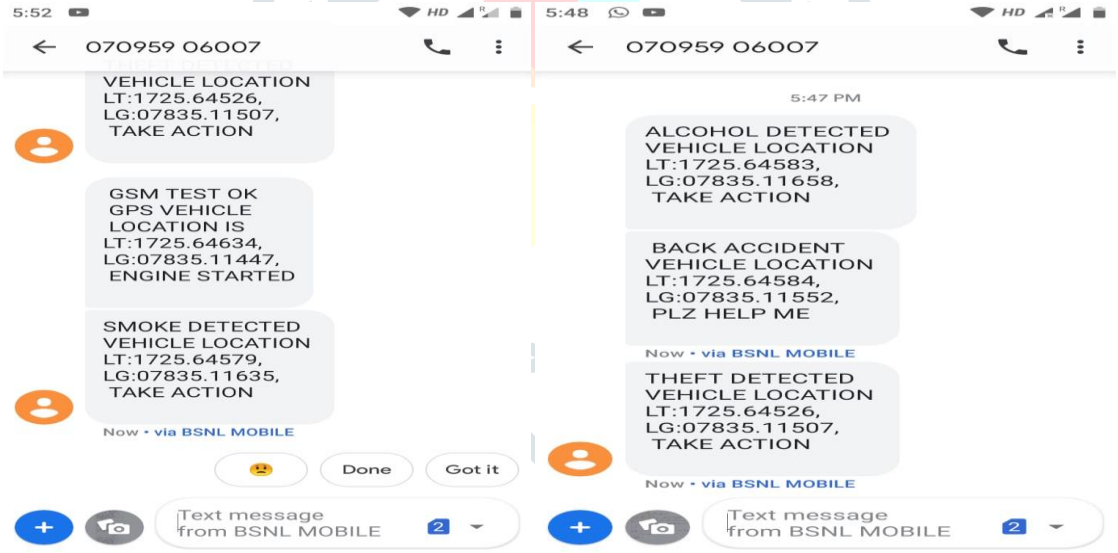
Review of Literature

Transport is one of the country's major infrastructures. The main transport concern is the difficulty of waiting time due to traffic congestion and any other live irregular ventilation issues. The health of both private and public cars is a major concern, so the tracking system for GPS vehicles assures their protection when driving. Different monitoring methods are used in the existing system, such as connectivity of Google maps, intelligent transit instructions or real-time tracking and estimation of arrival time. Radio Frequency Identification is a cellular identification system used in many areas, including the tracking of solid state, organisms, artefacts and animals [1]. Vibration is one of the most significant negative effects caused by transport systems. These are simply unwanted anomalies which affect the level of safety and the degradation of the technological and natural environment considerably. There are therefore many separate bodies of cars that have as their principal goal the reduction and propagation of vibrations or the destruction of them and not merely the question of the substance [1, 2, 3]. The article presents a basic monitoring system for the vibrations of vehicles [2]. In the developed world today road services are a major concern. Recent studies show that one-third of the deadly or severe incident figure involves insufficient or excessive sizes and route modifications (such as roadwork or unwanted obstacles). Reducing the number of collisions and reducing their effects is of great concern to traffic regulators, the automotive industry and academic organisations in the area of transport. One important line of action is the use of specialized driver assistance devices, which are auditory, hectic or visual cues that the car itself generates to convey the likelihood of a crash to the driver [3]. Based on the Embedded ARM User Guide, this article establishes a vehicle terminal based on the features to be introduced in the vehicle terminal. This method analyzes the NMEA0183 process, which provides information on the GPS location, and shows in real time the current position on the LCD terminal for the road direction of the vehicle, in order to complete current time and range, length, latitude and speed extraction [4]. Vehicle security, protection, and tracking devices and systems are revealed. Devices relevant to the present disclosure have a housing with at least one actuator, two or more adjustable arms with video cameras mounted, a processor located inside the housing, a processor in electronic communication with each of the video cameras, a GPS receiver and an accelerometer. The computer will wirelessly transmit and receive data through a transceiver. A central repository may be connected to one or more devices and allow users to remotely control vehicle status [5]. Around 1.4 million people die each year while driving because of their overbearing cell phones. In India, an approximate 1.35 lakhs died in 2010 as a consequence of road accidents, which accounts for roughly 10 percent of road accident deaths worldwide and these statistics are the maximum in the world [1]. Statistically from 2002 to 2012, there was a rise of 1.9 per cent in injuries and 5 per cent in deaths [2]. Speaking or talking, when working on a cell phone, is a major distraction that contributes to an accident. A potential danger to the driver is dialling a number when conversing on the radio is a more severe issue [6]. For Brunei Darussalam, the Average Vehicle Speed Monitoring System (ASMoS) is introduced a speed control system. This article explores the idea of an RFID (Speed Tracking System) and focuses on all aspects of hardware and software. The main controller kit combines a basic RFID-shelf control unit (CCU) with a Raspberry-Pi chip. For calculating speed over a defined distance, we use a two-point interrogation method. As the main vehicle identification for the proposed design, the ultra light frequency (UHF) RFID

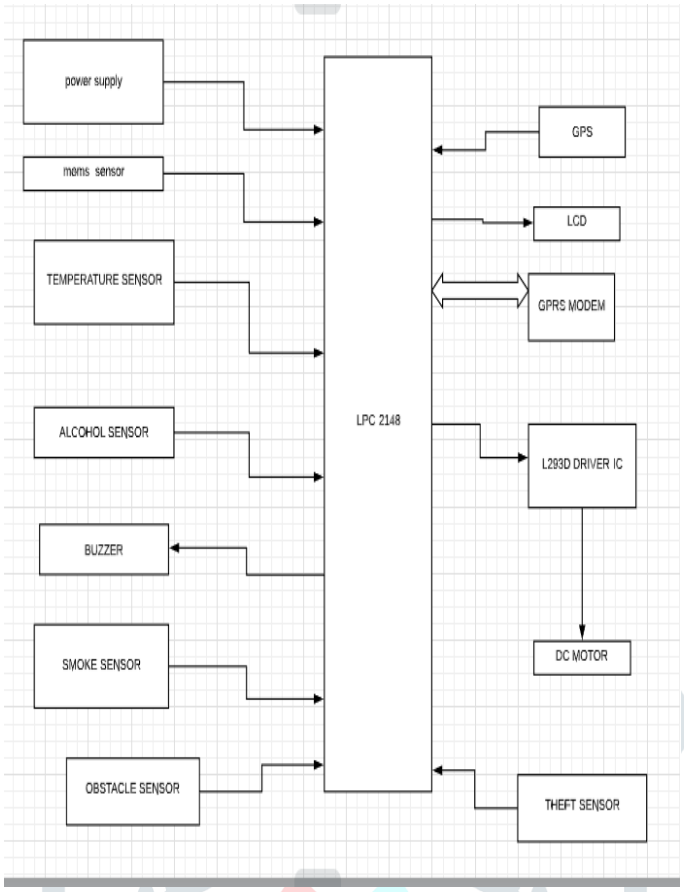
transponders were used The CCU connects to a remote data storage management service for a secure socket layer (SSL). ASMoS is designed to help monitoring and recording offenses in connection with speed traffic by road protection authorities [7]. A video camera is an attachment bracket that attaches the video camera to the first point of mounting of the carrier of transportation, the ball mount unit, the screw mounting unit, the brace and the supporting bracket that can be placed on a carrier, for connection of the computer to the other point. The second connection point is versatile to bind to and view. The monitoring system gives an overview of the areas next to the commercial carrier (i.e. blind spots) following change. The surveillance system therefore improves car awareness, avoids road accidents and allows road safety easier [8]. Due to the high number of vehicles on the road, traffic risks and injuries have risen since the last two decades, placing more life at risk. Information of road accidents is published every day in newspapers and on television. Many accidents are caused not by defective cars, but by reckless driving. The rate of vehicle theft is also rising day by day. More than a million cars are stolen each year in the U.S. Theft of automobiles happens not only in metropolitan areas but also in seedy industrial areas [9]. Embodiments contribute to a device and procedure for controlling and tracking the vehicles in real time. The framework includes at least a subsystem for engines, a monitoring subsystem, a dispatch subsystem, a servicing subsystem, and a subsystem for driver. The automotive structure, as demonstrated, comprises of a car, a production control unit, a global positioning system device, a rain gage device, a steering wheel sensor tool, at least one mirror, at least one monitor, and a diagnostic engine panel. The system also includes the control subsystem which communicates (for example, wirelessly) with at least the vehicle system, the dispatch subsystem, the maintenance subsystem and the rider subsystem [10].

Block Diagram of System

Monitoring section

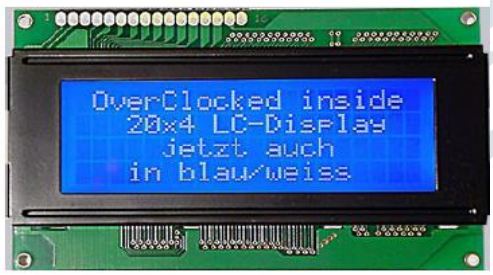


Vechile section

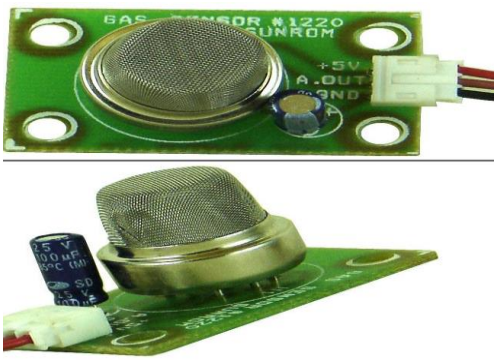


Hardware Development

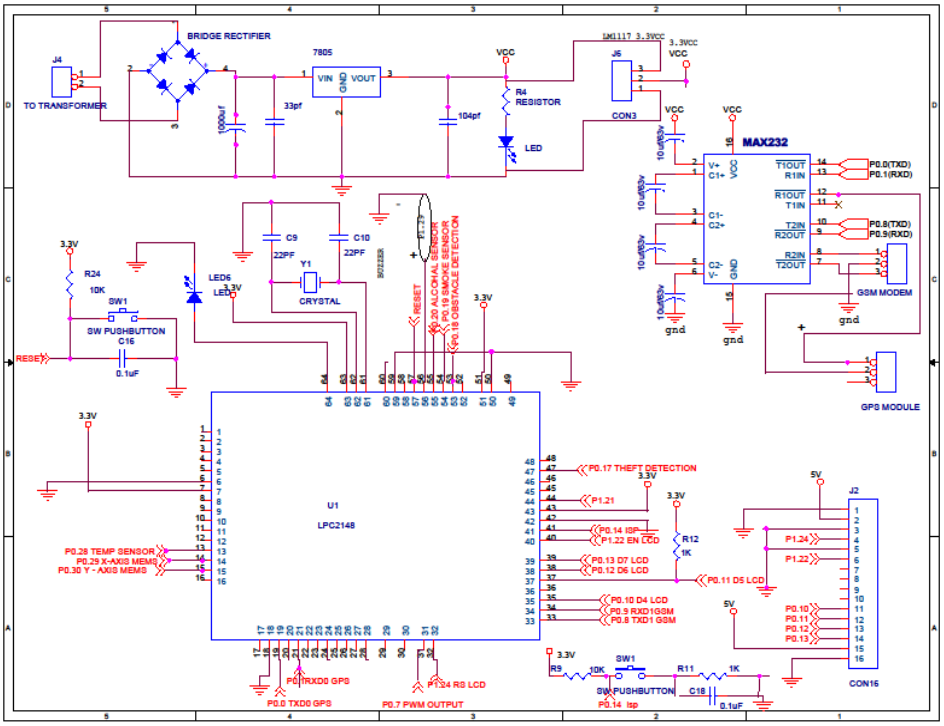
LCD



Combustible SMOKE Sensor – Analog Out



Schematic diagram



Schematic Diagram

Results

According to this research, we will build a real-time parameter tracking system to measure temperature, vehicle alcohol values and also find the exact position of the car when there are suspicious circumstances and robbery is observed. A GSM modem is the adapted modem that identifies and acts like a telephone on a mobile operator's SIM card. The GSM modem operates as a Smartphone from the point of view of mobile operators. The device will talk to a computer using a GSM modem via a mobile network In general, these GSM modems can be reached via mobile internet but are used for sending and receiving text and MMS messages. A GSM can be a cable, an Ethernet, a Wi-Fi or a mobile phone willing to use its GSM modem.

Conclusion and future Scope

We will significantly reduce the alarm time and reliably pinpoint the location of the incident, rendering injury identification and information sharing automatic. It will then save the rescuer from wasting their time in pursuit. The model car crash and rollover tests have shown that this device will identify the resulting incident automatically and submit related information. These tasks can be accomplished by the "false alarm," "support" and "security" buttons respectively.

Use GPRS for data transmission and inserting parallel network tracks, while increasing processing and programming capacities. Or use an alternate micro-controller like RaspBerry Pi entirely and make it into IoT Territory, significantly improving the performance and efficiency as well as more functionality.

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